Reducing Greenhouse Gas Emissions at Home or Abroad?

An interpretation of the Supplementarity Requirement in the Articles 6, 12, and 17 of the Kyoto Protocol

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Contents

1 Introduction

Reducing greenhouse gas emissions at home or abroad has become *the* dilemma within contemporary climate change policy, touching upon various concepts such as cost-effectiveness, environmental effectiveness, equity, and sustainable development, and challenging the North-South relationship in itself. Although Annex I Parties to the Kyoto Protocol are legally obligated, through the supplementarity requirement, to meet their Kyoto emission reduction targets to a certain extent through 'domestic actions', most Parties prefer to make use of flexibility mechanisms arguing that actions to reduce emissions should be taken where it is cheapest given the fact that the effect on the atmosphere will be the same.

This research paper explores the limits to flexibility and elucidates the understanding of the supplementarity requirement in the Articles 6, 12 and 17 of the Kyoto Protocol. While the flexibility mechanisms allow Annex I Parties to earn and trade emission allowances through projects implemented either in other developed countries or in developing countries and which they can use towards meeting their commitments, the supplementarity requirement in the articles was adopted to safeguard concerns as to the integrity of the international climate regime. There was especially a concern that the flexibility mechanisms could confer 'a right to emit' on Annex I Parties. The negotiators of the Kyoto Protocol attempted to design the provisions on the mechanisms in such a manner as to both fulfil the cost-effectiveness promise of the mechanisms and to address concerns about environmental integrity and equity.

Even though the objective the supplementarity requirement is clear, the practical implications of the requirement have been subject to a long debate particularly due to the lack of a quantified definition of the requirement. As the Kyoto Protocol only mentions that

use of the flexibility mechanisms 'shall be supplemental to domestic actions' for the purposes of meeting the Kyoto reduction commitments, Kyoto Parties have disagreed on the amount of actions to be taken at home. This research paper attempts to provide an effective and justifiable interpretation of the supplementarity requirement which would be acceptable to both industrialized and developing countries taking into account cost-, and environmental effectiveness as well as equity considerations.

The approach used to elucidate the understanding of the supplementarity requirement is based on the law of treaty interpretation. The second chapter analyzes the interpretation of the requirement in accordance with the Articles 31(1), (2), and (3.a) Vienna Convention. This analysis aims to put forward a workable understanding of the supplementarity requirement through a literal, teleological and systematic interpretation. The chapter discusses not only the relevant provisions in the United Nations Framework Convention on Climate Change and the Kyoto Protocol, but also subsequent agreements, such as the Bonn Agreements and the Marrakech Accords, and the negotiating history of the supplementarity requirement in the Kyoto Protocol.

Article 31 (3.b) Vienna Convention states that to determine the interpretation of a provision, there shall also be taken into account any subsequent practice in the application of the treaty. The third chapter presents therefore the implementation of the supplementarity requirement by the Kyoto Protocol's parties and examines whether state practice 'establishes an agreement of the Parties regarding the interpretation'[1]. This empirical analysis considers both the National Communications of those Parties that rely most on the flexibility mechanisms and the In-Depth Review Reports to these National Communications by the UNFCCC Compliance Committee.

National reports are however not always up-to-date and do not always adequately present a Party's climate change policy and its use of flexibility mechanisms to attain the emission reduction target in the Kyoto protocol. Therefore, the third chapter also requires the

[1] 1969 Vienna Convention on the Law of Treaties, Article 31.3.b.

presentation of several in-depth national climate change policies. Finally, it will be considered whether the implementation of the supplementarity requirement and state practice could contribute to determining to interpretation of the requirement.

The fourth chapter of this thesis relies on the principle of effective interpretation. In accordance with this principle, a treaty must be given an interpretation that enables its provisions to be 'effective and useful', that is, to have the appropriate effect[2]. If the general rule of interpretation, subsequent agreements, or the empirical analysis of state practice do not put forward a workable understanding of the supplementarity requirement, an interpretation of the supplementarity requirement could be presented in accordance with the 'principle of effectiveness'.

The final chapter thus assesses the supplementarity requirement against the background of dangerously increasing greenhouse gas emissions, the need of global participation in the fight against climate change, the idea of environmental effectiveness and cost-effectiveness, and the importance of domestic actions for moral and political reasons. This chapter provides a guideline for the interpretation of the supplementarity requirement which contributes to the main objective to attain "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system"[3], while also taking into account the above concerns.

Background to the thesis

Climate change is widely acknowledged to be the most important environmental problem facing humankind. The scientific assessment of the causes and impacts of climate change has been undertaken by the Intergovernmental Panel on Climate Change (IPCC). Established in 1988, the IPCC has produced four major assessment reports that have helped policy-makers understand that the Earth's climate system is the result of complex and dynamic interactions between the earth's atmosphere, biosphere and oceans which human

[2] Cassese 2005, p.178.

[3] UNFCCC Article 2.

activities are beginning to throw out of balance. The most recent IPCC report, the 2007 Fourth Assessment Report, concluded that change of the climate is unequivocal and that most of the observed increase in globally averaged temperatures since the midt-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations[4].

Because the atmosphere knows no boundaries and the world's economies are linked through trade and capital flows, international cooperation to reduce greenhouse gases is essential. The institutional framework for such cooperation is provided by the 1992 United Nations Framework Convention on Climate Change (UNFCCC) and by its additional 1997 Kyoto Protocol. Article 2 of the Framework Convention establishes the ultimate objective for the Parties; stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. To attain this objective, legally binding greenhouse gas reduction targets for developed countries have been specified in the 1997 Kyoto Protocol. Annex I parties agreed to reduce, by an average, their greenhouse gas emissions by 5.2 per cent below 1990 levels for the period 2008 to 2012.

This 5.2 per cent reduction is estimated to represent an actual reduction of about 30 per cent over 'business as usual' emissions levels.[5] Economic research has foreseen that it will be very costly for some developed countries to comply with the target individually and therefore the Kyoto Protocol provides for international co-operation to reduce greenhouse gas emissions through flexible mechanisms. Thus countries with Kyoto targets could either achieve their targets through domestic efforts, or they could reduce greenhouse gas emissions in other countries at lower costs that at home by making use of the three flexible mechanisms set out in the Protocol: joint implementation (JI), the Clean Development Mechanism (CDM) and international emissions trading (IET).

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[4] IPCC WGI Fourth Assessment report of February 2007.

[5] Sands 2003

Article 17 of the Kyoto Protocol states that the Parties included in Annex I may participate in emissions trading with other Annex I Parties for the purposes of fulfilling their commitments under Article 3. The basic mechanics of international emissions trading are relatively simple. First, governments must commit to emission limitation targets. Second, such targets are divided into discrete, tradable units. These tradable units are often referred to as allowances, because they 'allow' the holder to emit a specified amount of greenhouse gases, say one ton of carbon dioxide or the equivalent amount of another greenhouse gas. Governments may choose whether to distribute these allowances to domestic emitting sources. Third, allowances could then change hands in several ways- in trades between governments, between a governmental and private entity, and between private entities. The party purchasing allowances is entitled to emit more; the party selling those allowances is required to emit less.

As to joint implementation, Article 6 of the Kyoto Protocol states that "any Annex I party, with a commitment inscribed in Annex B, may for the purpose of meeting its commitments under Article 3, transfer to, or acquire from, any other such Party emission reduction units resulting from projects aimed at reducing anthropogenic emissions by sources or enhancing anthropogenic removals by sinks of greenhouse gases in any sector of the economy", provided that certain requirements are met. The investing countries are the Annex I countries that will face high abatement costs for meeting their commitments, while the host countries are the Annex I countries with low cost function for meeting their commitments.

Finally, in Article 12, the Kyoto Protocol specifies that the Clean Development Mechanism allows for transfers of certified emission reductions resulting from emission reduction or removal projects between Annex I and non-Annex I countries. These certified emission reductions generated by such project activities can be used by Annex I Parties to help meet their emission reduction commitments under the Kyoto Protocol, and the project should assist non-Kyoto Parties with the achievement of sustainable development.

These flexibility mechanisms thus enable states with a reduction commitment for the period 2008-2012 to determine whether it shall take actions domestically or abroad. This

decision will depend on various considerations, such as ethics, politics and economics. Particularly economical considerations often determine a country's climate change policy and the decision to take actions abroad is often defended by the difference in marginal abatement costs, which are the costs of financing an emission reduction, between domestic and abroad. The marginal abatement cost will usually be far higher in an industrialized country than in a country in transition or developing country. Current economic and environmental research has indeed revealed that different nations would have different cost curves for greenhouse gases mitigation. Particularly, while some large developing countries and the countries in economic transition see very cheap opportunities, developed countries in general would face high cost curves and it might be too costly for them to achieve their emission reduction goals.

The flexibility mechanisms could thus assist industrial states to avoid high costs in fulfilling their emission limitation and reduction commitments at home, and to maximise the cost-effectiveness of climate change mitigation by allowing Parties to pursue opportunities to cut emissions, or enhance carbon sinks, more cheaply abroad than at home[6]. As the global climate system benefits from reductions wherever they are made, then making reductions abroad as part of a national strategy decreases the costs of reaching these reduction targets and increases the chances that they will actually be reached[7].

[6] See figure 1

[7] Freestone and Streck 2005, p.11.

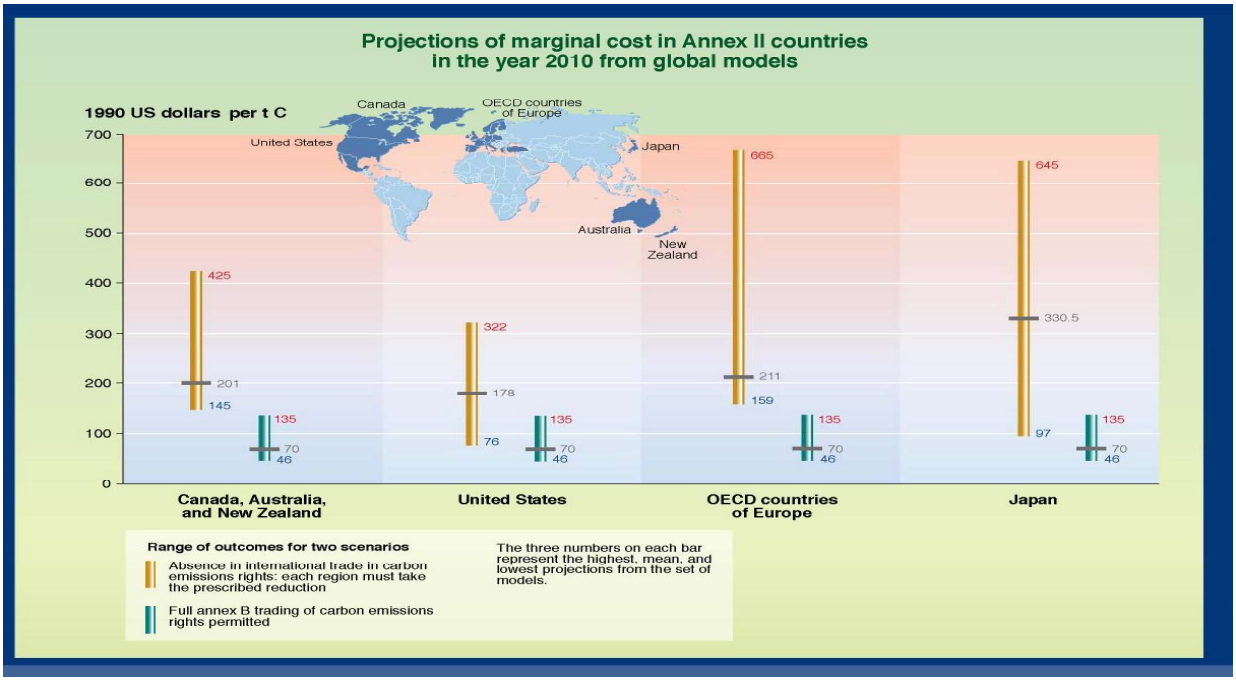

Figure 1 *Source: IPCC Third Assessment Report 2001*

All Annex I Parties to the Kyoto Protocol with emission limitation and reduction commitments inscribed in Annex B to the Protocol may participate in the Kyoto flexibility mechanisms provided that certain requirements are met. One of the requirements is the supplementarity requirement, which requires that any use of the flexibility mechanisms shall be 'supplemental to domestic actions'.[8] The understanding and implications of this requirement is the subject of this thesis.

[8] Kyoto Protocol, Article 6.1 (d) and 17. Article 12 is also subject to the supplementarity requirement but uses different wording, see Article 12.3 (b).

2 The Interpretation of the Supplementarity Requirement

The language of the articles on the flexibility mechanisms clearly prohibits any Annex I party from relying entirely upon imported allowances to meet its Kyoto commitments, but the precise interpretation of 'supplemental to domestic actions' has been subject to debate ever since the negotiations on the Framework Convention's articles on Joint Implementation. Already in the pilot phase for emissions reduction projects, the Parties to the Framework Convention recognized at COP 1 held in Berlin in 1995, under Decision 5/CP.1(c), that "Activities implemented jointly under the Convention are supplemental, and should only be treated as subsidiary means of achieving the objective of the Convention". In a similar fashion, the Kyoto Protocol mentions supplementarity, but does not define it in detail.

Article 6 (1)(d) Kyoto Protocol on joint implementation states that "The acquisition of emission reduction units shall be supplemental to domestic actions for the purpose of meeting commitments under Article 3". Article 12.3(b) states that "Annex B Parties may use Certified Emission Reduction only for (…) compliance with part of their quantified emissions limitation and reduction commitments". Finally, international emissions trading under Article 17 "shall be supplemental to domestic actions (…)".

This chapter analyzes the interpretation of the supplementarity requirement in accordance with Article 31 and 32 of the Vienna Convention on the Law of Treaties, which give place to a literal, systematic, and teleological interpretation. Pursuant to Article 31 not only the wording of the supplementarity requirement, the context, and the object and purpose of the term will be examined, but also subsequent agreements, such as the Bonn Agreements and

the Marrakech Accords. Firstly, however, the road to the supplementarity requirement in the Kyoto Protocol will be presented[9].

2.1 The Road to the Supplementarity Requirement in the Kyoto Protocol

The 1992 Framework Convention on Climate Change envisages that 'efforts to address climate change may be carried out cooperatively by interested Parties'.[10] More specifically, Article 4.2 (a), provides that each Annex I Party may implement mitigation measures jointly with other Parties, and Article 4.2 (d) provides that the first Conference of Parties to the Framework Convention 'shall take decisions regarding the criteria for joint implementation as indicated in Article 4.2 (a). The Intergovernmental Negotiating Committee, the body that negotiated the terms of the Framework Convention, held a preliminary discussion on the criteria for joint implementation of measures mitigating climate change during its Eighth Session in August 1993.[11]

As point of departure, the Intergovernmental Negotiating Committee emphasized that efforts undertaken cooperatively between countries to reduce net greenhouse gas emissions could potentially achieve greater emission reductions than might be possible if each country pursued only domestic actions, and countries could achieve these reductions more cost-effectively. As joint implementation would enhance the cost-effectiveness of global abatement, intensify transfers of capital, investment, technology, and know-how, the concept was welcomed by many countries.

Proposals on criteria for joint implementation (JI) were put forward by Australia, Costa Rica, the European Union, New Zealand, Norway, the Russian Federation, Switzerland, the United States and Uzbekistan. Norway, for instance, considered JI as an important element of a climate regime characterized by flexibility mechanisms that aim at global cost-

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[9] Article 32 VC provides that the records of the negotiating history may be used as a 'supplementary means of interpretation'

[10] Article 3.3 UNFCCC

[11] See UNGA: A/AC.237/41 and UNGA: A/AC.237/35, 'Matters relating to commitments, criteria for joint implementation'.

effectiveness without which it would be more costly and difficult to realize the objective of the Framework Convention in the long run. The Norwegian point of departure on the discussion of criteria for joint implementation was the primacy of the Framework Convention and the positive language pertaining to joint implementation in a number of Articles in the Convention. Norway argued that "criteria on JI cannot annul the Articles of the Convention, cannot be more restrictive than the language of the Convention, cannot restrict the use of JI if this institute is positively allowed under the Framework Convention, and cannot be used to reinterpret the Convention, and in particular the nature of the specific commitments in Article 4.2.a and 4.2.b Framework Convention". [12] In fact, Norway argued against any restriction on the use of joint implementation.

Several other countries, however, did propose restrictions on the joint implementation of mitigation measures. The EU considered that joint implementation does also entail risks of developments in the wrong direction[13]. The EU emphasized that it is in the common interest of both developed and developing countries to make global climate protection as efficient as possible and that this has to be done within the framework of equal partnership. It was the general view of the EU that in order to fulfil the specific commitments of Annex I Parties, contained in Article 4.2.b, to return their emissions individually or jointly, to their 1990 levels, countries must limit their greenhouse gas emissions at home through their own actions and should not use other countries to do their work for them. They argued that it would be harmful for the further life of the Framework Convention if industrialized countries gave the impression to wish to avoid fulfilment of their own obligations to protect the climate by means of joint implementation. The EU, expressed concerns that if joint implementation could be used by industrialized states as an attempt to 'buy' themselves free from reduction commitments of the Convention, it could not be expected that developing countries would take their commitments under Article 4.1 seriously.[14]

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[12] UNGA:A/AC.237/Misc.33, Comments from member states on criteria for joint implementation, Paper nr.15

[13] UNGA:A/AC.237/Misc.33, Comments from member states on criteria for joint implementation, Paper nr.3

[14] Ibid.

The EU therefore believed that all Parties should implement a significant and specified share of any future commitments through measures taken on their own territories[15]. They considered it very important that the criteria for using joint implementation would be clear and transparent so that the intention of developed countries could not be misunderstood. The EU stated that joint as well as individual implementation of the Framework Convention, is bound by the principle of common but differentiated responsibilities and equity in accordance with respective capabilities, which involves that Annex I Parties must take the lead in combating climate change and its adverse effects.[16]

Not only the EU, but also most developing countries were hostile to unrestricted joint implementation. Developing countries were mistrustful that trading would be used by developed countries to 'buy their way out' of taking domestic action while shifting the actual burden of pollution control to the South[17]. The G-77 and China repeatedly expressed opposition to JI, specifically JI between Annex I and non-Annex I Parties. In their proposal submitted at the eighth meeting of the Ad-hoc Group on the Berlin Mandate, the G-77 and China reiterated their call for the deletion of the whole draft article[18], and stated their view that emission limitation and reduction commitments should be met "primarily through domestic action".[19]

The concerns of the EU and developing countries were good illustrated by the small developing state Nauro. This country stated that:

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[15] Switzerland, for instance, proposed a 50 per cent ceiling on the use of joint implementation. See: Depledge 2000, par.297.

[16] UNGA:A/AC.237/Misc.37, Comments from member states on criteria for joint implementation, Paper nr.6

[17] Yamin 2005, p.5.

[18] This Draft Article on joint implementation was proposed by Chairman Estrada at the seventh meeting of the Ad-hoc group on the Berlin Mandate. The draft article confined joint implementation to Annex I Parties, but provided for the extension of the provisions to non-Annex I Parties in the event that the COP took a decision in accordance with the pilot phase of AIJ to allow JI between Annex I and non-Annex I Parties. See Depledge 2000, p. 61.

[19] Depledge 2000, p.63.

> "Even if JI between developed and developing countries is cost effective in the short run, it might operate to the long term disadvantage of developing countries. In terms of equity, such partnerships could undermine the spirit of global cooperation and fairness that must be any viable long term solution to the climate issue. […] As recognized in the Convention, developed countries bear the historical responsibility for global warming. The acknowledged past inequities in greenhouse gas emissions may be best addressed now by reductions in such emissions in developed countries, together with appropriate resource flows from developed to developing countries. Joint implementation risks the appearance, and perhaps the reality of buying up rights to ever greater greenhouse gas emissions by developed countries in the future. So, JI partnerships between developed and developing countries raise several problems of equity and politics, including the perceived inequity of developed countries buying out their historical obligations in order to increase, rather than decrease, their own future greenhouse gas emissions".[20]

Due to the position of the EU and developing countries, the Interim Secretariat to the INC, at its Ninth Session, adopted the principle that 'Joint implementation would be undertaken in conjunction with domestic actions' as one of the drafted 12 principles with regard to joint implementation. This principle became also one of the criteria for joint implementation under the pilot phase which was used to give countries the opportunity to gain and share experiences.

During the negotiations leading up to COP1 to the Convention in 1995, representatives of developing countries mainly remained against the mechanism of Joint Implementation. Moreover, critics feared that by using such joint implementation projects to achieve low-cost greenhouse gas reductions in developing countries, industrialized countries could avoid investments at home and, in this manner, maintain their environmentally unsustainable economies. Finally, some developing countries were concerned that joint implementation projects would exhaust their cheap reduction options, so that if emission reduction commitments were to be established for developing countries at a later date, the targets could only be achieved at higher costs.

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[20] UNGA:A/AC.237/Misc.33, Comments from member states on criteria for joint implementation, Paper nr.13.

Of all developing countries only Costa Rica embraced the concept of joint implementation and declared itself available for JI projects as early as 1994[21]. During COP1, Costa Rica played an important mediating role as it garnered consensus in the G77 and China Group for a compromise proposal. Under a name variation suggested by Malaysia, the 'Activities Implemented Jointly' program was established in 1995, which involved a pilot phase to promote 'learning by doing'. As part of the compromise, no international tradable credits for joint implementation projects would be awarded during the pilot phase, which was to last until the end of the decade.

From 1995 onwards, many of the developing countries became more and more interested in joint implementation projects, especially between developed and developing countries. In the last six months of 1997, Brazil took the lead in defining the essential features of the Clean Development Mechanism, which would function as a mechanism to channel sustainable development resources to developing countries, while allowing industrialized countries to purchase emission reduction units achieved by projects under the CDM to partially meet their reduction commitments. The proposal was backed by G77 and China, and ultimately approved by the COP under article 12 of the Kyoto Protocol.

Despite initial opposition by developing countries to unrestricted joint implementation projects under the Framework Convention, the market mechanism developed into three different flexibility mechanisms in the Kyoto Protocol; joint implementation, the clean development mechanisms, and international emissions trading. Indeed, as the CDM allowed for developing country participation, this removed one of the major points of disagreement in the discussions on joint implementation projects. Hence, after accepting the basic concept of a project-based mechanisms in the context of the CDM, it would have been inconsistent for developing countries to further oppose Joint Implementation among

[21] As to the supplementarity requirement, Costa Rica had proposed that Annex I Parties could meet up to 25 per cent of their domestic emission reduction obligations through joint implementation projects. Depledge 2000, par. 297.

industrialized countries. After some further negotiations among industrialized countries, Article 6 was agreed in principle after the first week of negotiations in Kyoto.[22]

As to international emissions trading, which was advocated by the non-EU industrialized countries but opposed by the EU and developing countries, the problem of diverging positions was solved by the statement in Article 17 that "the COP shall define principles, modalities, rules and guidelines for emissions trading". The Kyoto Protocol allowed thus for emissions trading, however further work would be required on it by the COP. Addressing the concerns of the EU and developing countries however, did lead to the inclusions of the phrase that use of emissions trading 'shall be supplemental to domestic actions'.[23] The meaning of this phrase is the subject of the following paragraphs, which analyse the supplementarity requirement through the general rule of interpretation stated in Article 31 of the Vienna Convention.

2.2 The interpretation of the supplementarity requirement in the light of Article 31 of the Vienna Convention on the Law of Treaties

The general rule of interpretation in Article 31 Vienna Convention provides for an interpretation "in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose".[24] The context for the purpose of the interpretation of the supplementarity requirement shall comprise not only the text of the relevant articles in the Kyoto Protocol, but also, more importantly, the preamble and the text of the Framework Convention on Climate Change, and furthermore, subsequent agreements between the Kyoto Parties adopted by the Conferences of Parties.

2.2.1 The ordinary meaning of the term 'supplemental to domestic actions'.

The wording 'supplemental to domestic actions' in the requirement that any use of the flexibility mechanisms 'shall be supplemental to domestic actions for the purpose of meeting commitments under Article 3', indicates that domestic actions should be the main

[22] Obert□r and Ott 1999, p.157.

[23] Article 17 Kyoto Protocol.

[24] See Cassesse 2005

means of meeting emission limitation and reduction commitments, and that the use of mechanisms should be supplemental to that domestic action. Supplemental in this phrase means that the Kyoto mechanisms may be used to *complete* domestic actions for the purpose of meeting a quantified emission limitation and reduction commitment. They could be used to *make up for a deficiency* in case domestic actions would not be enough to attain the specific Kyoto target, or the mechanisms could be used *to extend or strengthen* the whole.[25] A textual interpretation of the supplementarity requirement clearly underlines the importance of domestic actions and attributes only a limited role to the flexibility mechanisms.

2.2.2 The object and purpose of the supplementarity requirement

The negotiating history of the supplementarity requirement has clarified that the object and purpose of the requirement is to ensure that Kyoto Annex I Parties do not escape from taking a certain amount of emission reduction measures at home. This concerns especially developed Annex I Parties which face high abatement costs in fulfilling their emission limitation and reduction commitments at home. Without the supplementarity requirement these countries could, instead of reducing emissions at home, use flexibility mechanisms and buy the extra allowances they need to fulfil their Kyoto commitments. Related to this is the purpose to increase the contribution of domestic actions, which eventually should result in a fundamental change in Annex I Parties consumption and production patterns. This would contribute to reversing the unsustainable development trends in industrialized countries, to the effective long-term reduction of greenhouse gas emissions, and to the long-term survival of the climate regime[26].

2.2.3 The context of the supplementarity requirement

A thorough interpretation of the supplementarity requirement needs a consideration of the context of the requirement and more specifically of the Framework Convention's preamble and guiding principles. The Framework Convention and the Kyoto Protocol are based upon a number of important principles among which the principles of equity, sustainable

[25] The Legal Oxford Dictionary and the American Heritage Dictionary of the English Language.

[26] See further chapter 4.

development, and common but differentiated responsibilities.[27] Besides these principles, Article 3.3 Framework Convention underlines the importance of cost-effectiveness and states that 'policies and measures to deal with climate change should be cost-effective so as to ensure global benefits and the lowest possible cost'. This section discusses these principles.

2.2.3.1 Equity and the Principle of common but differentiated responsibilities

Under the Framework Convention, all the Parties undertake to be guided on 'the basis of equity' in their actions to achieve the objective of the Convention, and Annex I Parties agree to take into account the need for 'equitable and appropriate contributions' by each of them to the global effort regarding the achievement of the objective of the Convention[28]. A common interpretation of equity in the context of climate change is the concept of (historical) responsibility. "Because the Annex I Parties produced the majority of historical greenhouse gas emissions, they should not completely 'buy their way out' of their responsibilities by purchasing cheap credits, permits or assigned amounts from abroad, but rather that they should 'clean up their own mess' by fundamentally changing their consumption and production patterns through domestic action"[29]. It would thus be unfair or irresponsible if Annex I Parties would not reduce any emissions at home. Therefore, the use of flexibility mechanisms should be legally restricted.

However, to some extent, the historical responsibility approach to equity has already been established in the Framework Convention and the Kyoto Protocol through the principle of common but differentiated responsibilities. Indeed, the principle of common but differentiated responsibilities has provided an answer to questions such as how to allocate future responsibilities for environmental protection between states which are at different levels of economic development, which have contributed in different degrees to particular problems, and which have different environmental and developmental needs and priorities. The principle recognises that although countries have common responsibilities to protect

[27] Article 3.3 UNFCCC

[28] UNFCCC Article 3.1 and 4.2(a).

[29] Woerdman 2002, p. 353

the climate system, countries have also different responsibilities with regard to the preservation of the climate system because not every country has contributed to the same extent to climate change and because not all countries have the same resources to denote to the problem. There should be taken into account the differences in Parties' starting points and approaches, economic structures and resource bases, the need to maintain strong and sustainable economic growth, available technologies and other individual circumstances, as well as the need for equitable and appropriate contributions by each of these Parties to the global effort regarding the Convention's objective[30].

Nearly all commitments set out in the UNFCCC are differentiated: more detailed commitments have been taken on by a total of 41 developed countries that are listed in Annex I[31]. The obligations for developed states were further specified in the 1997 Kyoto Protocol. At its core lie legally binding targets for the developed country Parties to reduce greenhouse gas emissions over the 2008-2012 period. The principle of common but differentiated responsibilities with no binding reduction commitments for developing countries, acknowledges that the global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response. The application of this principle contributed to developing countries becoming party to the Kyoto Protocol. This is a very important factor because although these countries are not subject to legally binding reduction commitments for the first commitment period, they should become subject to commitments in the next period.

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[30] UNFCCC Article 4.2(a)

[31] Article 4.2 requires developed country Parties and other Parties included in Annex I to take the lead in modifying longer-term trends in anthropogenic emissions consistent with the objective of the Convention. Moreover, developed country Parties should assist developing country Parties in meeting the costs of adaptation to the adverse effect of climate change and should provide them with financial resources and technology. Finally, developed country Parties should take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties. See further UNFCCC Articles 4.3, 4.4, and 4.7.

While there are authors who argue that the equity principle requires a legal restriction on the use of the flexibility mechanism, other authors argue that there is no need for that because of the fact that equity considerations are already taken into account through the principle of common but differentiated responsibilities in the Framework Convention and the Kyoto Protocol[32]. Still, when there are provisions in these agreements subject to diverging interpretations, the equity principle should be used as a guidance in finding an effective interpretation of such a provision. Accordingly, it could be justified to place an extra burden on those Parties which already are subject to more stringent commitments, on the condition that that would be equitable.

2.2.3.2 Cost- effectiveness

According to Article 3.3 of the Framework Convention, policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible costs. This principle lies behind the flexibility mechanisms. The flexibility mechanisms are market mechanisms which are based on international trade cooperation in mitigating climate change. As such they provide a cost-effective manner for Annex I parties to meet their binding reduction commitments. Any ceiling on the use of the flexibility mechanism would increase the costs of reaching the limitation and reduction commitments for developed countries, and thereby reduce cost-effectiveness.

2.2.3.3 Sustainable development

The principle of sustainable development has been referred to several times both in the UN Framework Convention on Climate Change and in the Kyoto Protocol. However, the exact meaning of this principle has been subject to discussion ever since its 'inception' in the Report *Our Common Future* of the World Commission on Environment and Development in 1987. The Commission defined the principle as follows: 'Sustainable development is development that meets the needs of the present without compromising future generations to meet their own needs.'[33].

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[32] See, for instance, Banuri 1996. See further chapter 4.

[33] World Commission on Environment and Development 1987.

This apparently simple phrase has been subject to a large amount of literature, in particular on the components of the principle. Sands (2003) for instance, argues that the principle of sustainable development appears to consist of four elements which together comprise the legal elements of the concept of sustainable development[34]. The first element is the principle of intergenerational equity, which requires the need to preserve natural resources for the benefit of future generations. Secondly, the principle of intragenerational equity, which requires the 'equitable' use of natural resources and implies that use by one state must take account of the needs of other states. Thirdly, the principle of sustainable use, which means the aim of exploiting natural resources in a manner which is sustainable. The fourth element is the principle of integration, which leads to the need to ensure that environmental considerations are integrated into economic and other development plans, programmes and projects, and that development needs are taken into account in applying environmental objectives.

Many other authors and institutions have attempted to define the principle of sustainable development[35]. In the World Summit on Sustainable Development held in Johannesburg in 2002, the Plan of Action recognized that poverty eradication, changing unsustainable patterns of production and consumption, and protection and managing the natural resource base of economic and social development are overarching objectives of, and essential requirements for, sustainable development[36]. While definitions on sustainable development vary in their extension, the principle can be shortly described as a "multifaceted concept covering integration of economic, social and environmental concerns, equity and justice between generations and within the present generation".[37] It is explained by Voigt that "while there is no doubt that balancing these factors is pivotal for sustainable development, it does not necessarily mean treating all three in the same manner"[38]. In fact, this author

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[34] Sands 2003, p.253.

[35] See for instance, International Law Association New Delhi Declaration, Resolution 3/2002, annexed to UN document A/57/329.

[36] World summit on sustainable development 2002.

[37] Voigt 2007.

[38] Voigt 2006, p.52-53.

argues that climate stability by the protection of a safe global climate system is of overarching priority, and that "priority must be given to protect fundamental life-supporting system in principle and in practice"[39]. In practice, sustainable development thus requires an" integration of the various components within the framework set out by the ultimate objective of the climate convention"[40].

The need to integrate the various interests of developed and developing countries, and to integrate various concepts, such as equity, cost-effectiveness, and environmental effectiveness, as demanded by the principle of sustainable development, challenges the interpretation of the supplementarity requirement since the flexibility mechanisms and the legal restriction to use them protect a number of apparently diverging interests.

On the one hand, all three flexibility mechanisms provide a cost-effective manner to reduce greenhouse gas emissions globally. As developed country Parties are subject to more stringent limitation and reduction commitments, following from the principle of common but differentiated responsibilities, the flexibility mechanisms play a significant role in achieving the common reduction target of Article 3.1 Kyoto Protocol. This is an important aspect of the climate regime since a considerable reduction of greenhouse gas emissions globally amounts to the preservation of the climate system, and thereby to intergenerational equity; preserving the climate system for the benefit of future generations.

On the other hand, however, use of the flexibility mechanisms also raises questions as to intragenerational equity. As most greenhouse gas emissions come from industrialized countries, these countries should also take domestic actions in order to reverse their unsustainable development trends. This would amount to sustainability of the legal climate regime and of the natural climate system. Indeed, in the long term, preservation of the climate system requires deep cuts in industrialized country emissions by, for instance, making fundamental changes to the way energy is produced and used in these countries.

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[39] Ibid, p.52 and 88.

[40] Ibid, p.52

Moreover, if these industrialized countries do not undertake domestic actions to reduce greenhouse gases domestically, it would be unrealistic and unreasonable to assume that developing countries will take on significant reduction targets if industrialized countries decline to do so on the grounds of costs[41].

Although sustainable development does not point at a particular interpretation of the supplementarity requirement, a certain limit on the use of the flexibility mechanisms appears to be in line with the principle. From the perspective of the principle and the need to integrate equity and cost-effectiveness and environmental integrity, the supplementarity requirement could be considered a 'necessity'. In fact, without the requirement, certain components of sustainable development would become subordinate to the idea of cost-effectiveness, which undermines the principle.

An interpretation of the supplementarity requirement in accordance with the principle of sustainable development is further elaborated on in paragraph 4.5.1.

2.2.4 In sum

An interpretation of the supplementarity requirement in accordance with Article 31 § 1 and 2 of the Vienna Convention recognizes the importance of domestic actions for various reasons, but recognizes also that the flexibility mechanisms play an important role in reducing the costs of meeting Kyoto commitments, enhancing the achievability of those commitments and thus the effectiveness of the global climate regime. Although an interpretation in accordance with Article 31 § 1 and 2 helps understanding the importance of the flexibility mechanisms and the need to restrict the use of them to some extent, it does not put forward a more detailed and workable guideline on how to interpret the term 'supplemental to domestic actions' in practice. Subsequent agreements adopted after the Kyoto Protocol might clarify the supplementarity requirement more thoroughly and will therefore be discussed in the next section.

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[41] Yamin 2004, p.208

2.3 Subsequent agreements on the supplementarity requirement

The provisions in the Framework Convention and the Kyoto Protocol have been extensively elaborated by the Framework Convention's governing institutional body, the Conference of the Parties (COP). Furthermore, both the Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI) have contributed significantly to the preparatory work needed for consideration by the COP on the "definition of relevant principles, modalities, rules and guidelines, … [for the flexibility mechanisms]"[42].

At COP 4, held in Buenos Aires, Argentina from 2 to 13 November 1998, the COP decided on a work programme on the flexibility mechanisms in the Kyoto Protocol with a view to taking a decision on all these mechanisms at COP 6[43]. In general, the work programme invited Parties to submit proposals on principles, modalities, rules and guidelines for the mechanisms. More specifically, the programme required not only a general interpretation on supplementarity, but also a determination of the 'part of' commitments under articles 3 and 12.2. With regard to the interpretation of supplementarity requirement in the articles 3, 6.1(d), 12.2, 12.7, and 17, Parties were invited to submit proposals on whether there should be defined a concrete ceiling in quantitative and qualitative terms based on equitable criteria[44].

Proposals varied from a concrete ceiling to no ceiling at all on the use of the flexibility mechanisms. This is illustrated by the response of, on the one hand, the European Community and its member States and Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia and Switzerland (the EU and Switzerland), and on the other hand Australia, Canada, Iceland, Japan, New Zealand,

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[42] FCCC/CP/1997/7/Add.1 (Decision 1/CP.3)

[43] 'The Buenos Aires Action Plan'.

[44] FCCC/CP/1998/16/Add.1

Norway, Russian Federation, Ukraine and United States (the Umbrella Group) to the questions on the supplementarity requirement submitted by the Group of 77 & China.[45]

The Group of 77 & China expressed that the Kyoto mechanisms should be supplemental to domestic action, but submitted a list of issues and questions which needed to be properly assessed first. Among the questions were the following:

> ► How to ensure that domestic actions by developed countries are their primary means of GHG limitation and reduction, and that the overseas mechanisms remain supplemental to such domestic actions by developed countries for the purpose of meeting their quantified emission limitation and reduction commitments?
> ► How to define and quantify "part" in "...part of quantified emission limitation and reduction commitments", in Article 12.3 (b) of the Protocol?
> ► How to ensure that any emissions trading between the developed country Parties shall be supplemental to domestic actions for the purpose of meeting their quantified emission limitation and reduction commitments?

The EU and Switzerland emphasized that the use of flexibility mechanisms should be supplemental to domestic actions and that domestic actions should thus provide the main means of meeting commitments under Article 3. The EU stated that Annex I Parties overall should achieve a significant reduction in their emissions domestically, and argued that a 'concrete ceiling' on the use of all the flexible mechanisms had to be established.

The Umbrella Group, however, argued that although Articles 6 and 17 of the Kyoto Protocol require that JI and IET are to be "supplemental to domestic actions" for the purpose of meeting commitments under Article 3, the Kyoto Protocol does not call for domestic actions to be the 'primary means' of limiting greenhouse gas emissions. Concerning the suggestion that the carefully negotiated compromise term 'supplemental' in Articles 6 and 17 be quantified, the Group argued that such an approach is neither

[45] FCCC/CP/1998/MISC.7

authorized nor required by the Kyoto Protocol. In their opinion, international emissions trading would be more effective in achieving emission reductions at the lowest cost if there are no restrictions on the use of flexibility mechanisms to meet the commitments under Article 3. The ability to trade without a quantitative restriction would encourage earlier emission reductions and minimise the overall cost of achieving the collective Annex I environmental objective. Indeed, internationally mandated limits on the quantity available to be traded, by substantially reducing the benefits available from trading, would increase the cost of emission reductions, and ultimately, in the long term, reduce the quantity of reductions that can be achieved, thus delivering less environmental benefit. Furthermore, the Umbrella Group did not agree that the COP/MOP should seek to quantify "part of" in article 12.3 (b) because, for instance, fewer projects would then be initiated and therefore direct benefits, such as new technology or investment, to non-Annex I Parties would be reduced.

These two negotiating parties clearly took highly diverging positions on the issue of supplementarity[46]. Hence, it was difficult for the Conference of Parties to agree on a general interpretation on the supplementarity requirement in the Kyoto Protocol at that time. Therefore, for the fifth Conference of Parties, held in Bonn, Germany from 25 October to 5 November 1999, the Chairmen of the Subsidiary Bodies provided a synthesis of proposals by all Kyoto Parties on principles, modalities, rules and guidelines which could be of help to elucidate the forming of a common interpretation on the supplementarity requirement[47].

While the Umbrella Group recalled their opposition to a ceiling on the use of the flexibility mechanisms, the EU and Switzerland recalled their position that a concrete ceiling on the

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[46] The position of the African Group and of developing countries was comparable with that of the EU and Switzerland. The African Group stated that the primary objective of the Framework Convention is to take action domestically to reduce emissions. The use of flexible mechanisms, therefore, should be limited to an agreed percentage of the emissions targets provided in the Kyoto Protocol for Annex I Parties. See FCCC/CP/1998/MISC.7 add.2 (Paper by Uganda on behalf of the Africa Group)

[47] FCCC/SB/1999/INF.2

use of the Kyoto mechanisms should be defined in quantitative and qualitative terms based on equitable criteria. In the view of the latter, a properly defined ceiling would encourage Annex I Parties to develop stringent domestic policies and measures in order to modify long-term emissions trends, the technological structure, especially long-lives infrastructure, and production and consumption patterns. Thereby, the ceiling would also contribute to preparing the path for more ambitious commitments in the second and subsequent commitment periods. The definition of supplementarity of the EU and Switzerland roughly implied that 50 per cent of the Kyoto commitments should be achieved domestically via a ceiling on the Kyoto mechanisms[48].

The Group of 77 and China stated that guidelines on supplementarity must take into account articles 2 and 3.2 of the Kyoto Protocol and that developed country access to the mechanisms should be contingent on satisfaction of prescribed domestic effort in fulfilment of commitments under Article 3.

The Alliance of Small Island States (AOSIS) believed that the design of all three mechanisms should firmly rest on three basic design principles: scientific and regulatory certainty; environmental and cost-effectiveness; and equity between Parties, and that therefore, the use of mechanisms by any Annex I Party had to be supplemental to its domestic action. AOSIS was concerned that an over-dependence of certain Annex I Parties on the use of the Kyoto Protocol mechanisms to achieve their commitments may undermine their ability, firstly, to fulfil commitments domestically, secondly, to demonstrate supplementarity, and thirdly, to undertake more ambitious commitments in

[48] More specifically, the EU proposed the following definition: Net acquisitions by an Annex B Party for all three Kyoto mechanisms together must not exceed the higher of the following alternatives:
Five per cent of its base year emissions multiplied by five plus its assigned amount

2

Or: Fifty per cent of the difference between its annual actual emissions in any year of the period from 1994 to 2002, multiplied by five and its assigned amount

2

the next round of negotiations. AOSIS thus also strongly supported the concept of supplementarity.

Based on these proposals by Parties, the Chairmen of the Subsidiary Bodies submitted a consolidated text entitled "Consolidated text on principles, modalities, rules and guidelines", which served as a basis for further negotiations on the flexibility mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol[49]. Indeed, based on this "Consolidated text" the sixth Conference of Parties Part I, held at The Hague from 13 to 25 November 2000, presented four options for the general interpretation of the supplementarity requirement in all three Kyoto Protocol articles[50].

The four options on "Part of"/Supplementarity in the Articles 6, 12 and 17 of the Kyoto Protocol presented were:

1. No elaboration of supplementarity.
2. Parties included in Annex I shall meet their emission limitation and reduction commitments primarily through domestic action. [Use of the mechanisms pursuant to Articles 6, 12 and 17 by a Party included in Annex I shall be limited to a maximum of 30 per cent of the effort required to meet its commitment under Article 3. This ceiling may be reviewed periodically by the COP/MOP.] Compliance with this requirement will be assessed by the compliance committee on the basis of information submitted under Article 7.
3. Net *acquisitions* by a Party included in Annex B for all three mechanisms pursuant to Articles 6, 12 and 17 together must not exceed the higher of the following alternatives:

   (a) 5 per cent of its base year emissions multiplied by 5 plus its assigned amount

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[49] FCCC/SB/2000/4

[50] FCCC/CP/2000/5/Add.3 (Vol. V)

(where 'base year emissions' may be replaced by 'average annual emissions in the base period, as provided for in Article 3, paragraph 5');

(b) 50 per cent of the difference between its annual actual emissions in any year of the period from 1994 to 2002, multiplied by 5 and its assigned amount.

However, the ceiling on net acquisitions can be increased to the extent that a Party included in Annex B achieves emission reductions larger than the relevant ceiling in the commitment period through domestic action undertaken after 1993, if demonstrated by the Party in a verifiable manner and subject to the expert review process to be developed under Article 8.

Net *transfers* by a Party included in Annex B for all three mechanisms pursuant to Articles 6, 12 and 17 together must not exceed:
5 per cent of: its base year emissions multiplied by 5 plus its assigned amount

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(where 'base year emissions' may be replaced by 'average annual emissions in the base period, as provided for in Article 3, paragraph 5').

However, the ceiling on net transfers can be increased to the extent that a Party included in Annex B achieves emission reductions larger than the relevant ceiling in the commitment period through domestic action undertaken after 1993, if demonstrated by the Party in a verifiable manner and subject to the expert review process to be developed under Article 8. If a Party is a member of an Article 4 agreement to fulfil commitments jointly, the assigned amount is the assigned amount allocated to the Party under that agreement. Otherwise, it is the assigned amount for the Party as calculated in accordance with Article 3, paragraph 7.[51]

4. Article 3 establishes emission limitation and reduction commitments for Parties included in Annex I, consequent to which domestic actions shall be the principal

[51] This third option was based upon the EU proposal which roughly implied a ceiling of 50 per cent.

> means for each such Party to achieve its commitments. The participation of each Party included in Annex I in the mechanisms pursuant to Articles 6, 12 and 17 shall be contingent on that Party demonstrating through the Protocol's procedures and mechanisms on compliance that domestic actions will constitute the principal means of achieving its Article 3 commitments. For the purposes of compliance with Article 3 commitments, each Party included in Annex I shall limit its use of the mechanisms pursuant to Articles 6, 12 and 17 collectively which shall not exceed X per cent of that Party's assigned amount pursuant to their quantified emission limitation and reduction commitments as inscribed in Annex B.

The difficulty of agreeing on the interpretation of the supplementarity requirement was clearly illustrated when COP-6 Part II, held in Bonn in July 2001, instead of choosing for one of the four options as a definite interpretation of supplementarity, adopted the Bonn Agreement on the Implementation of the Buenos Aires Plan of Action with a vague and open definition of the supplementarity requirement in the articles 6, 12 and 17[52]. According to the Bonn Agreement the 'use of the mechanisms shall be supplemental to domestic actions, and domestic actions shall thus constitute a significant element of the effort made by each Party included in Annex I to meet its quantified emission limitation and reduction commitments under Article 3, paragraph 1'. While the EU had argued for a quantitative cap, the Umbrella Group wanted maximum flexibility, which implied no cap. Due to their bargaining power, the latter position prevailed. Moreover, one of the eligibility requirements for participation in the flexibility mechanisms, namely reporting on supplementarity, was deleted from the list[53].

The EU had apparently given up its proposal and accepted the unspecified requirement that domestic action shall be a 'significant element' of Annex I countries' efforts[54]. The EU

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[52] FCCC/CP/2001/5, the 'Bonn Agreement for the Implementation of the Buenos Aires Plan of Action'.

[53] Dessai 2003, p.151.

[54] The term 'significant' literally means 'extensive or important enough to merit attention' (see Compact Oxford English dictionary).

made this compromise at COP 6 Part II to prevent that some Umbrella countries would withdraw from the Kyoto Protocol like the US had done a few months earlier in March 2001. This largely unexpected US decision had changed the game and the EU, who believed in the Kyoto Protocol but was sceptic to unrestricted emissions trading, rather had a market-based Protocol than no Protocol at all[55]. Yet some of the environmental concerns of the EU were accommodated at COP 6 Part II by means of restrictions on the use of sinks and the requirement, among other things, that each Annex I Party shall maintain a commitment period reserve which should not drop below 90 per cent of its assigned amount[56].

The phrase in the Bonn Agreement that 'the use of the mechanisms shall be supplemental to domestic actions, and domestic actions shall thus constitute a significant element of the effort made by each Party included in Annex I to meet its quantified emission limitation and reduction commitments under Article 3.1' seems contra dictionary. The wording 'supplemental to domestic actions' implies that the Kyoto mechanisms may be used to complete domestic actions, that they could be used to make up for a deficiency, or that the mechanisms could be used to extend or strengthen the whole[57]. The wording of the phrase in the Bonn Agreement, however, suggest that domestic actions only have to constitute a significant element of the effort made by each Party included in Annex I to meet its quantified emission limitation and reduction commitments under Article 3.1, which would imply that states could, as the principal means, rely on the use of mechanisms to meet any commitments.

The Bonn Agreement not only introduced a new phrase on supplementarity, but it also added that "the Parties included in Annex I shall implement domestic actions in accordance with national circumstances and with a view to reducing emissions in a manner conducive to narrowing per capita differences between developed and developing country Parties

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[55] Woerdman 2002, p. 338.

[56] Ibid

[57] See p.15.

while working towards achievement of the ultimate objective of the Convention".[58] This 'converging or narrowing' approach seems to lay down a new criterion for Annex I Parties to meet[59]. Even though the wording 'with a view to' does not seem to implicate a strong obligation, the phrase could be important for the interpretation of the supplementarity requirement. For domestic actions to be considered a 'significant element' of the effort made by an Annex I Party, these domestic actions would need to contribute to 'narrowing down per capita emission differences between developed and developing countries'. As Annex I Parties are supposed to continue reducing greenhouse gas emissions, the question then becomes: how much domestic action is necessary to result in a decrease in per capita Annex I country greenhouse gas emissions and thus in converging per capita emission levels?

As an illustration, in 2003 Norway had a per capita emission level of 12.1 tonnes CO2 equivalents, with a total emission level of 54,8 million tonnes[60]. Suppose a non-Annex I Party had a per capita emission level of about 3.1 million tonnes CO2 equivalents, the difference would then be 9 Mt. Use of the flexibility mechanisms might involve that Norway meets its Kyoto commitments, but it does not as such result in a decrease in per capita greenhouse gas emissions in Norway. On the contrary, emissions trading, for instance, entails that a Kyoto Party such as Norway, which has a difficulty in meeting its greenhouse gas reduction commitments, purchases allowances from a Party which finds it relatively easy to meet its commitments. Consequently, Norway becomes entitled to emit

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[58] The Marrakesh Accords, adopted at COP-7, uses the same wording as used in the Bonn Agreement. The well-known expressions, that the use of the flexibility mechanisms shall be supplemental to domestic action, that domestic action shall constitute a significant element of Parties' efforts, and that domestic action must be taken with a view to converge per capita emission differences between developed and developing countries, are stated not only in the preamble to the Draft decision/CMP.1 but also in the Draft decision itself. This could imply that the supplementarity requirement is not only considered a guideline by the COP but instead a criteria which countries have to met, (see further Chapter 3). For the text of the Marrakesh Accord see: The Marrakech Accords & the Marrakech Declaration, http://unfccc.int/cop7/documents/accords_draft.pdf.

[59] In general, the convergence approach involves that per capita emissions of developed countries and developing countries converge to the same low level within a few decades.

[60] See <http://globalis.gvu.unu.edu/country.cfm?country=NO&indicatorid=199>

more and its per capita greenhouse gas emission level increases instead of decreases. In accordance with the requirement to 'implement domestic actions … in a manner conducive to narrowing per capita differences between developed and developing country Parties', Norwegian domestic actions would be needed to counteract the per capita increase resulting from the use of the flexibility mechanisms.

The amount of domestic actions necessary for Annex I Parties to converge per capita emission differences depends particularly on whether the country is an allowance buyer or seller. Especially Norway faces high abatement costs and is therefore considered an allowance buyer[61]. While all Annex I Parties have to undertake domestic actions in a manner conducive to narrowing per capita differences between developed and developing country Parties, Parties which buy many allowances from other Parties need to undertake domestic actions of such a degree that these actions also counteracts the positive effects on the per capita emission level resulting from the use of the flexibility mechanisms. These Kyoto Parties thus face a higher burden than other Parties.

An interpretation of the supplementarity requirement in accordance with the 'convergence approach' seems reasonably defendable in theory; however, in practice such an interpretation entails a number of difficulties. Firstly, the approach might lead to an unacceptable burden for some developed countries and for all fast growing countries with high fossil energy intensity[62]. Moreover, the approach is rejected by advanced developing countries with high greenhouse gas emissions, such as China, because they would have to reduce emissions as developed countries with the same per capita emissions, although their historical responsibility is smaller[63].

Secondly, the convergence approach might not be in line with the Annex I Parties commitments in the Kyoto Protocol. As the convergence approach requires developed

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[61] Cicero Report 1998:1.

[62] Ghersi 2003.

[63] Höhne 2006.

countries to reduce their per capita greenhouse gas emissions level, the Kyoto Protocol allows some developed countries, for instance Norway, to increase their emissions during the first commitment period compared to 1990. In this situation, the convergence approach does not provide sufficient clarification as to the interpretation of the supplementarity requirement.

Frankly, the text of the Kyoto Protocol and of subsequent agreements do not provide the international community with a threshold on the level of domestic actions necessary to be considered a 'significant element' of Annex I parties' effort. The convergence approach might provide some guidance on the design of a future climate regime in general, however with regard to a useful interpretation on the supplementarity requirement it contains shortcomings. Consequently, the international community has remained left with the vague wording of the Bonn Agreement and the Marrakech Accords. From 2001 onwards, the negotiators have had many years to provide a more concrete interpretation of the supplementarity requirement. However, at the first Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol, held at Montreal from 28 November to 10 December 2005, the supplementarity requirement was formulated in exactly the same way as in the Bonn Agreement and in the Marrakech Accords.[64]

2.4 Conclusions

An interpretation of the supplementarity requirement in the Articles 6, 12 and 17 of the Kyoto Protocol in accordance with Article 31 and 32 of the Vienna Convention on the Law of Treaties does not provide us with an effective and usable interpretation. While Kyoto Parties have taken differing positions on the supplementarity requirement ever since the negotiations on joint implementation under the Framework Convention, they never reached an official agreement on a concrete ceiling on the use of the flexibility mechanisms or the amount of domestic actions required to meet their quantified emission limitation and reduction commitments under Article 3.1 Kyoto Protocol. As a result the supplementarity requirement was only mentioned in the Kyoto Protocol, but not defined in detail.

[64] See decision 2/CMP.1

Subsequent agreements were aimed at defining relevant principles, modalities, rules and guidelines for the flexibility mechanisms and supplementarity requirement. The wording of the Bonn Agreement and the Marrakesh Accords provides for the following optional interpretation; the requirement that the use of the flexibility mechanisms shall be supplemental to domestic actions entails that domestic actions shall constitute a 'significant element' of the effort made by each Annex I Party to meet its quantified emission limitation and reduction commitments. This requirement could be interpreted from the statement in the Bonn Agreement and the Marrakesh Accords that the Annex I Parties shall implement domestic actions in accordance with national circumstances and with a view to reducing emissions in a manner conducive to 'narrowing per capita differences between developed and developing country Parties'. In order to constitute a 'significant element', domestic actions need to be of such magnitude that they positively affect the aim of converging per capita emission differences.

The practical implications of this assertion would vary from country to country and would depend in particular on the height of the abatement costs and the extent to which a country needs to make use of flexibility mechanisms to meet its Kyoto commitments. Indeed, an Annex I Party finding it relatively easy to meet its targets needs to undertake less domestic action than a country which buys a lot of allowances from other Annex I Parties, because the more emission allowances a country buys, the more its per capita emission level will increase, and the more domestic actions are necessary to counteract that increase. An interpretation of the supplementarity requirement in accordance with the convergence approach sounds reasonably defendable from the wording of the Bonn Agreement; however it is an ineffective interpretation as it raises many theoretical and practical difficulties, including issues of morality, equity, costs, and usability.

Although the Conference of Parties has not defined supplementarity in a quantitative way, the COP did lay down the substantive requirement of showing that the use of mechanisms is supplemental to domestic actions and that domestic actions constitute a significant element of the effort made by Annex I Party. Secondly, the COP decided on a reporting requirement which entails that Annex I Parties have to report on how its domestic actions

constitutes a significant element of the effort made to meet its Article 3.1 target. Thirdly, the Marrakesh Accords requires expert review teams to provide a detailed examination of a number of issues, including supplementarity relating to mechanisms pursuant to Articles 6, 12 and 17.[65]

As the interpretation of the supplementarity requirement has not given a satisfying answer to the question as to what extent Kyoto Parties could make use of the flexibility mechanisms in order to meet their quantified emission limitation and reduction commitments, state practice could clarify the role of the supplementarity requirement in current climate change policy. The next chapter assesses the implementation of the supplementarity requirement and of the specific review and reporting requirements within the European Union and several Umbrella countries.

[65] These three requirements were reiterated at first Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol, held at Montreal from 28 November to 10 December 2005. See decisions 2/CMP.1, 15/CMP.1, and 22/CMP.1

3 The Implementation of the Supplementarity requirement

Article 31.3.b Vienna Convention states that to determine the interpretation of a provision, there shall be taken into account any subsequent practice in the application of the treaty. While the previous chapter aimed to elucidate the interpretation of the supplementarity requirement in accordance with Article 31 and 32 of the Vienna Convention, this chapter is particularly devoted to examine whether any conclusions on the interpretation of the supplementarity requirement can be drawn based upon current state practice. This chapter considers whether the implementation of the supplementarity requirement in the Articles 6, 12 and 17 'establishes an agreement of the Parties regarding the interpretation' in the view of Article 31.3.b Vienna Convention.

First, this chapter clarifies the Kyoto Protocol compliance system and its reporting and review requirements. Second, the chapter presents a substantive overview of the implementation of the supplementarity requirement by a number of selected Annex I Parties, namely the European Union, the Netherlands, Switzerland, Canada, Japan, and Norway. The section assesses the nature of domestic policies and measures, the amount of total domestic actions, and their intention to make use of the flexibility mechanisms to meet their Kyoto targets. Finally, the ratio of domestic efforts and use of the flexibility mechanisms will be calculated in order to reveal the significance of domestic efforts in comparison with the use of Kyoto flexibility mechanisms. This section concludes with an assessment of the significance of the supplementarity requirement in practice, in the light of the Kyoto Protocol compliance mechanism.

Besides presenting the implementation of the supplementarity requirement in the view of the Kyoto Protocol compliance mechanism, this chapter also assesses the implementation

of the supplementarity requirement within the European Union, the Party which favoured a ceiling on the use of the flexibility mechanisms. The EU Emissions Trading Scheme (EU ETS) will be discussed, as well as the Linking Directive which enables use of the projects-based mechanisms to be linked to the EU ETS. In this context, Norway's connection to the EU scheme will also be considered.

3.1 Reporting and Review Requirements

While there is no methodology available to define supplementarity in a quantitative way, there are substantive, reporting and review requirements on supplementarity relating to the mechanisms. In accordance with the Framework Convention, the Kyoto Protocol and subsequent decisions, all Annex I Parties are required to submit regular 'communications'[66]. These national communications by Annex I Parties should provide "information on how its use of the mechanisms is supplemental to domestic action, and how domestic actions thus constitute a significant element of the effort made to meet its quantified limitation and reduction commitments under Article 3, paragraph 1".[67] Until now, Kyoto Annex I Parties were required to submit four national communications. The fourth national communication was due 1 January 2006. All selected Annex I Parties submitted their fourth national communication.

Besides National Communications, Annex I Parties are required to submit reports on 'demonstrable progress'[68]. According to the brief guidelines outlined in Decision 22/CP.7 par.4 and Decision 25/CP.8, drafted by the COP/MOP, a report on demonstrable progress must include a description of domestic measures aimed at preparing for the implementation of mitigation commitments under the Protocol, including legal and institutional steps and programmes for domestic compliance and enforcement. The report must also include trends in, and projections of, greenhouse gas emissions, along with an evaluation of how the described domestic measures will contribute to the achievement of a Party's emission commitments, in the light of these trends and projections.

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[66] Art. 4.1.j and 12 UNFCCC.

[67] In accordance with the provisions of decision 5/CP.6, decision 22/CMP.1 and 15/CMP.1-annex.

[68] Article 3.2 Kyoto Protocol.

The information submitted by the Parties is to be assessed by the Facilitative Branch of the Compliance Committee. The mandate of the facilitative branch is to provide advice and facilitation to Parties in implementing the Protocol, and to promote compliance by Parties with their Kyoto commitments. It is responsible for addressing questions of implementation by Annex I Parties of response measures aimed at mitigating climate change in a way that minimizes their adverse impacts on developing countries and the use by Annex I Parties of the mechanisms as 'supplemental' to domestic action. Furthermore, the facilitative branch may provide 'early warning' of potential non-compliance with emissions targets, methodological and reporting commitments relating to greenhouse gas inventories, and commitments on reporting supplementary information in a Party's annual inventory. The Facilitative Branch will base its deliberations on reports from expert review teams, the subsidiary bodies, Parties and other official sources.[69]

The information submitted by Annex I Parties will, in first instance, be reviewed by expert review teams[70]. The Kyoto Protocol characterises the review process as consisting of a "thorough and comprehensive technical assessment of all aspects of a Party's implementation of the Protocol".[71] The individual review provides an assessment of the completeness of the national communication, along with a detailed examination of each of its sections and how the information presented therein was arrived at. The review provides, for instance, a detailed examination of supplementarity information provided under Article 7 paragraph 2, which includes information on supplementarity relating to the mechanisms pursuant to Article 6, 12 and 17.[72] Furthermore, the provision that Annex I Parties 'shall implement domestic actions in accordance with national circumstances and with a view to reducing emissions in a manner conducive to narrowing per capita differences between developed and developing country Parties while working towards achievement of the

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[69] See <http://unfccc.int/kyoto_protocol/compliance/introduction/items/3024.php>

[70] Article 8.1 Kyoto Protocol. See decisions 2/CP.1, 9/CP.2, 6/CP.3 and 33/CP.7

[71] Article 8.3 Kyoto Protocol.

[72] Decision 23/CP.7 and Decision 22/CMP.1

ultimate objective of the Convention' will be taken into account in the review of demonstrable progress under Article 3.2 of the Protocol[73].

The National Communications and Reports on Demonstrable Progress, the In-depth review reports by Expert Review Teams, and the Synthesis Report of Reports Demonstrating Progress can clarify the role of the supplementarity requirement in practice, and how state parties and Kyoto institutions interpret the supplementarity requirement. These reports form therefore the foundation for the findings in the following sections.

3.2 Implementation of the supplementarity requirement

The supplementarity requirement requires that domestic actions constitute a 'significant element' of the total effort of Annex I Parties to reduce greenhouse gas emissions and that use of the flexibility mechanisms be supplemental to domestic actions. In order to disclose the 'significance' of those domestic actions, this section presents firstly the intensity and nature of domestic actions and secondly, the use of the flexibility mechanisms by each selected Party.

3.2.1 Domestic policies and measures

The strength of domestic actions can be revealed by their effect on each Party's greenhouse gas emission trends. Indeed, these trends often reflect the intensity and strength of domestic policies and measures intended to slow down or reverse emission trends. On the other hand, however, national circumstances such as population growth or changes in national gross domestic product also influence greenhouse gas emission trends. In general though, as presented in their national communications, national governments can significantly affect their emission trends by implementing strong domestic measures.

Domestic efforts that in many cases began in the early 1990s have now begun to yield results by limiting growth in greenhouse gas emission trends[74]. Total aggregated greenhouse gas emissions of all reporting Annex I parties decreased by 6.4 per cent

[73] Decision 25/CP.8 and Yamin 2004, p. 361

[74] Synthesis of reports demonstrating progress, par. 9.

between the base year and 2003[75] and, with current policies and measures, emissions are projected to be 4.1 per cent below base year levels in 2010[76]. Although this is an important development, none of the selected Annex I Parties are however projected to meet their individual Kyoto targets with current policies and measures. Consequently, besides current policies and measures, Parties are necessitated to implement additional measures.

Indeed, even though current domestic policies and measures may be strong and effective, they do not make the Kyoto targets realizable. Those Parties that may not meet their Kyoto targets with existing measures noted their determination to attain their targets and to take further action in the context of their existing national programmes, or to launch new measure and programmes.[77] With additional policies and measures, total greenhouse gas emissions of reporting Annex I parties are projected to be about 9.6 per cent below base year levels in 2010.

Additional measures are expected to bring emissions closer to the Kyoto targets in all Parties that envisage such measures. A few countries in particular, namely the European Community and Japan, projected a strong move towards achieving their individual Kyoto targets, with a considerably reduced distance to the target, through the implementation of additional measures. In the European Community emissions of greenhouse gases are projected to be 1.6 per cent below base year emissions in 2010 as a result of measures already under implementation. The implementation of additional proposed measures is projected to reduce EU-15 greenhouse gas emissions to 6.8 per cent below base year levels in 2010. The use of the Kyoto mechanisms brings the emissions to below 8 per cent, thus meeting the Kyoto targets.[78]

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[75] Ibid, par. 56.

[76] Ibid, par.67

[77] Ibid, par. 86.

[78] Fourth National Communication of the European Union.

Japan observed a reverse in trend from increasing emissions during the pre-Kyoto period towards decreasing emissions during the 'early action' period, which could be explained in part by the implementation of effective policies and measures; significant progress has been made in reducing or at least stabilizing emissions in the very difficult to control sector of transport.[79] More specifically, after a strong growth during the pre-Kyoto period (of 9.7 per cent), greenhouse gas emissions in Japan have already decreased (by 1.5 per cent) between 1997 and 2003. This decrease is projected to continue and even accelerate until 2010 (to -2.3 per cent) with current policies and measures.[80] With additional measures based on its Kyoto Protocol Target Achievement Plan, Japan projected an accelerated emission reduction by 8.7 per cent until 2010.

Other Parties which achieved a limiting growth in greenhouse gas emissions are the Netherlands and Switzerland. These Parties observed a reverse in trend from increasing emissions during the pre-Kyoto period towards decreasing emissions during the 'early action' period, which could also be explained by the implementation of effective policies and measures. The Netherlands has now succeeded in stabilizing emissions altogether. With additional measures in place, emissions in 2010 are projected to be only 0.9 per cent above the base year level instead of 13.6 per cent.[81]

For Switzerland, the fact that emissions remained stable can be seen as the result of a combination of two factors: policies and measures influencing greenhouse gas emissions and weak economic development in the 1990s.[82] The effect of measures already implemented are projected to bring the overall reduction of greenhouse gas emissions between 1990 and 2010 to 3 per cent. In March 2005, the Swiss government decided to introduce additional measures in order to reach the goals of the Kyoto Protocol.[83] These

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[79] Synthesis of reports demonstrating progress, par. 9.

[80] Ibid, par. 70-73.

[81] Netherlands report on demonstrable progress, p.28.

[82] Switzerland's report on demonstrable progress, p. 24.

[83] Ibid, p. 27.

additional measures are projected to reduce total greenhouse gas emissions with 6 per cent by 2010[84].

There are, however also Parties which reported a significant increase in emissions. Norway reported an accelerated increase in emissions; from a 9 per cent increase between 1990 and 2003 to a 23 per cent increase between 1990 and 2010 with current policies and measures in place[85]. Norway did not provide a 'with additional measures' scenario in its fourth national communication in spite of a significant difference between their 'with measures scenario' levels and the Kyoto target levels.[86]

An other example is Canada, in which emissions are still growing significantly; in 2004 Canada's emissions were 758 million ton, which is a 26.6 per cent increase over 1990 emissions, and 34.6 per cent above the Kyoto target[87]. Canada states that this is because Canada's efforts to reduce greenhouse gas emissions have been out-distanced by growth in its economy, energy exports and population since 1990.[88] Canada notes that its domestic policies and measures have not achieved the level of reductions anticipated and reported in its third national communication of 2001. As a result, Canada's new government is developing and will implement a new suite of policies and measures to reduce greenhouse gas emissions as part of its new environmental agenda.[89]

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[84] Switzerland's report on demonstrable progress, p.28.

[85] Norway's report on demonstrable progress, p. 12.

[86] Synthesis of reports demonstrating progress', par. 75. See paragraph 3.2.3.2 for an up-to-date presentation of Norway's climate change policy.

[87] Canada's Report on Demonstrable Progress under the Kyoto Protocol, p.8.

[88] Ibid, p.11.

[89] Ibid. An in-depth review report on Canada's fourth national communication has not yet been published. See further 3.2.3.1.

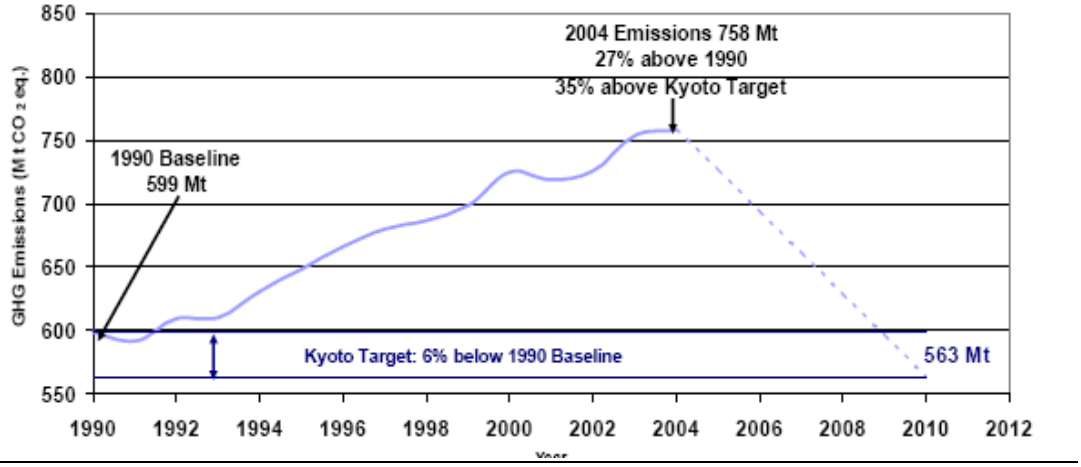

Figure 1: Canada's GHG emission trend

The supplementarity requirement requires that Annex I Parties implement domestic policies and measures as a significant part of the total effort undertaken by Parties to reach their targets, it does however not prescribe a specific result or decrease in emission trends. Moreover, Parties are free in their choice of domestic measures. They have been given the discretion as to decide which policies and measures may be most appropriate and effective within their states, depending on various national circumstances. Hence, for the purpose of this chapter it is insufficient to compare the various domestic policies and their results with each other. What should be assessed instead is the level of domestic efforts in comparison with the use of the flexibility mechanisms for each of the selected Parties, which elucidates the significance of their domestic efforts.

3.2.2 Use of the flexibility mechanisms

Almost all Parties are preparing to use the Kyoto mechanisms as part of their mitigation strategies. Use of the Kyoto mechanisms is seen as a tool to achieve the dual objective of delivering emission reductions at a lower cost compared with domestic measures and contributing to international cooperation on climate change mitigation. Many Parties, including the EU, Japan, Norway, and the Netherlands, have advanced their efforts in preparing for the use of the Kyoto mechanisms. For these Parties, use of the Kyoto

mechanisms is expected to facilitate meeting the Kyoto targets[90]. As an illustration, savings from additional domestic measures being planned by the EU-15 would result in emission reductions of 6.8 per cent. The inclusion of Kyoto mechanisms will lower projected emissions in 2010 to 9.3 per cent below base year levels[91]. Japan will fall short of achieving its Kyoto Protocol commitment by 1.6 per cent of the total volume of the base year. Japan reports that it will be necessary to make up this difference by utilizing the Kyoto mechanisms while respecting the general rule that the Kyoto mechanisms are supplementary to domestic measures[92].

Currently, Parties are at different stages of preparation for the use of flexibility mechanisms in meeting their Kyoto targets. A few Parties expect to use such credits to meet a considerable part of their emission reduction commitments, and these countries are at an advanced stage of implementation, for instance the Netherlands and Japan.[93] In the Netherlands, the target for government use of the Kyoto mechanisms is 100 million tonnes CO2 equivalents over the 2008-2012 commitment period. By 2005, this target was already entirely covered by either framework agreements with intermediary organisations, participation in funds, of project contracts. Institutional and financial arrangements have also been made. The Netherlands was in fact a first-mover on the market for emission reduction based on the Kyoto mechanisms.[94]

For other countries, such as Norway, the details of how exactly the Kyoto mechanisms will be used in the period 2008-2012 had not yet been decided at 1 January 2006. Norway reported that the details will depend on how the link to the European Union's emissions trading scheme will be established[95]. For Norway cost-effectiveness has been the point of departure both for formulating the present climate change policy and for designing and

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[90] Synthesis of reports demonstrating progress, par. 91.

[91] EU Report on demonstrable progress, p. 5.

[92] Japan's Fourth National Communication, p.134.

[93] Synthesis of reports demonstrating progress, par. 43.

[94] Netherlands report on demonstrable progress, p. 18-20.

[95] For the result, see par. 3.2.4.2. and 3.2.4.3.

implementing policies and measures that will ensure compliance with the quantitative commitments of the Kyoto Protocol. According to projections, Norway faces a gap to be covered through further national measures or through the use of the flexibility mechanisms of about 10 million tonnes annually, or about 50 million tonnes for the period 2008-2012[96]. Although the introduction of further domestic measures would reduce the need to acquire Kyoto units, the Expert Review Team noted that, since the marginal costs of domestic action is generally higher than the current international price of CO2, this advocacy would favour the acquisition of Kyoto units[97].

More exceptionally is Canada's national communication, in which Canada reports that it does not intend to make use of the flexibility mechanisms, even though Canada faces a significant gap to its Kyoto target[98].

3.2.3 Significance of domestic action in proportion to use of the flexibility mechanisms

Many Parties stress their commitment to ensure that domestic policies and measures, including activities aimed at enhancing removals by sinks, comprise a significant part of their overall effort to meet the Kyoto target. Practically all Parties that intend to acquire Kyoto units expect also to have domestic policies contributing significantly to the overall effort to attain the Kyoto target.[99] Japan, for instance, expects that according to its recent 'with measures' projections the difference between projected emission levels and the Kyoto target will be 12 per cent. It expects additional measures to bring the emissions down by 6.5 per cent. LULUCF activities will contribute another 3.9 per cent and the remaining 1.6 per cent be covered by acquisitions of Kyoto units. Altogether, Japan expects that domestic policies and measures, including LULUCF activities, will contribute up to 86 per cent of its effort to attain its Kyoto target, which constitutes a significant element of this effort[100].

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[96] Norway's report on demonstrable progress under the Kyoto Protocol, p. 8 and 16

[97] Report of the centralized in-depth review of the fourth national communication of Norway, par. 60.

[98] Canada's fourth report on climate change, p. 66. See further par. 3.2.4.1.

[99] Synthesis of reports demonstrating progress, par. 94

[100] Japan's Fourth national communication p.134 and Japan's Report indicating demonstrable progress p. 4.

The Netherlands expects that the difference between 'with measures' projections in 2010 and the Kyoto target will be around 20 Mt CO2 eq. or around 10 per cent of the base year level. It expects to bring emissions down by another 2.5 per cent resulting from additional measures. The government of the Netherlands has already allocated financial resources to acquire around 20 Mt CO2 eq. Kyoto credits per year through joint implementation or CDM projects[101], which will more than compensate for the remaining difference to the Kyoto target.[102]

An other example is Switzerland which estimates its overall emission reduction commitment at 4.2 Mt CO2 eq. annually for the first commitment period. It then envisages more than half of this reduction, or a minimum of 2.2 Mt to be covered by domestic measures, 1.6 Mt maximum to be covered by acquisition of Kyoto units and 0.4 Mt to come from additional acquisition of Kyoto units by companies in complying with the national CO2 emissions regulations.[103]

The Secretariat summarizes in its 'Synthesis of reports demonstrating progress in accordance with article 3.2 of the Kyoto Protocol' that the national reports by Parties show that, taking into account both, the effect of implemented and additional measures, the overall effect stemming from domestic measures is projected to outweigh the effect of expected acquisition of Kyoto units in the overall effort to meet the Kyoto target.[104] In fact, none of the national communications have been criticized on grounds of inconformity with the supplementarity requirement.

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[101] Besides this purchase, operators in the Netherlands can acquire up to 8.6 Mt CO2-equivalents though use of the EU ETS. See further par. 3.2.4.3.

[102] Synthesis of reports demonstrating progress, par. 95

[103] Ibid, par. 96

[104] Ibid, par. 97.

3.2.4 Considerations

Almost all Parties are preparing for the use of the Kyoto mechanisms as part of their mitigation strategies. The relevant legislative arrangements are being put in place to make the Kyoto mechanisms operational. In all cases use of the Kyoto mechanisms is seen as a tool to achieve the dual objective of delivering emission reductions at a lower cost compared with domestic measures and contributing to international cooperation on climate change mitigation.[105]

In addition, Parties have already implemented a considerable number of domestic measures to reduce greenhouse gas emissions, and Parties expect the magnitude of the impact of these implemented policies and measures to increase. Most Parties have also in place plans for additional policies and measures that could help reduce the difference between their projected emission levels for the first commitment period and their Kyoto targets. Parties estimated the potential impacts of their domestic policies and measures and of their use of the Kyoto mechanisms and, based on these estimates, the Secretariat noted that, taking into account all the data reported, Parties domestic policies and measures are expected to form a significant part of the overall effort to achieve the Kyoto target.[106]

In general, Annex I Parties' climate change policies are considered to be in line with the supplementarity requirement and none of the National Communications have been criticized on the grounds of incompliance with the supplementarity requirement. More specifically, however, the significance of domestic actions in relation to the use of the flexibility mechanisms varies among the Annex I Parties, and the ratio domestic actions and use of the flexibility mechanisms differs from Party to Party.[107]

Questionable is whether any thorough conclusions on the implementation of the supplementarity requirement can be drawn from the National Communications, In-Depth

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[105] Ibid, par 140

[106] Ibid, par. 147.

[107] See table on p. 62.

Review Reports and Reports on Demonstrable Progress. An important reason for this is the nature of the reporting system. Incompliance or incomprehensive compliance with reporting obligations does hardly ever lead to 'binding consequences'.[108] Although all selected Parties have complied with their obligation to report, the quality of the reports vary significantly. While most selected Parties, such as the European Union, the Netherlands[109], Japan, and Switzerland reported extensively on their implemented domestic policies and measures, other Parties were less specific.

Canada, for instance, reported that its emissions are forecasted to increase by about 1.5% annually between 2004 and 2010, to reach 828 Mt by 2010 and almost 897 Mt by 2020[110]. However, Canada did not report specific domestic measures which slow down or reverse the greenhouse gas emission trend. Moreover, both its national communication and report on demonstrable progress lack an overview of 'with measures' projection and 'with additional measures' projection. The Expert Review Team has not yet published its report of the centralized in-depth review of the fourth national communication of Canada, and it is questionable how the Expert Review Team reviews this Canadian National Communication.

A different example is Norway. This Party did not provide a concise presentation of its policies and measures[111] and how it intends to cover the gap between 2010 projected emissions and the Kyoto target. In fact, according to projections, the total greenhouse gas emissions per year will be about 10 million tonnes higher than Norway's commitment

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[108] Sands 2004, p.376. Article 18 Kyoto Protocol provides that "any procedures and mechanisms under this Article entailing binding consequences shall be adopted by means of an amendment to the Kyoto Protocol".

[109] The National Climate Policy Implementation Plan outlines how the Netherlands intends to meet its emission reduction commitments under the Kyoto Protocol.

[110] Canada's fourth national communication, p.148.

[111] Report of the centralized in-depth review of the fourth national communication of Norway, p. 5. The Expert Review Team recommended that Norway provides this information in its next national communication.

under the Kyoto Protocol. At the time of delivery of its fourth national communication details for the period of 2008-2012 had not yet been decided[112].

Thus while some reports are very comprehensive and detailed, others lack specifics or contain incomplete information. Moreover, as the latest reports were due January 2006, this chapter requires the inclusion of more in-depth and more up-to-date information on several Parties' climate change policies and their intended use of the flexibility mechanisms. The next sections focus on Norway and Canada as these countries provided the least detailed reports. The findings in the sections are not based upon the information reported to the Compliance Committee of the UNFCCC, but instead on official national governmental climate change plans. Finally, the climate policy of the European Union will be discussed in more depth. In this context, the impact of the EU Emissions Trading Scheme and the Linking Directive will be considered.

3.2.4.1 Canada's Climate Change Policy

Canada is committed to reduce its greenhouse gas emissions to 6 per cent below 1990 levels, which, in 2002, implied a reduction of 240 Mt from their projected "business-as-usual" emissions level in 2010. Canada's Climate Change Plan 2002 contained three steps to achieving this target. Step I included actions already underway, which were expected to reduce emissions by 80 MT. Of these actions, a reduction of 2 MT would be achieved through cooperation on the international market. Step II involved further measures, which were expected to reduce emissions by a further 100 MT. Of these additional measures, a minimal reduction of 10 MT would be achieved through government purchases of permits in the international market. Step III will address the remaining 60 MT.[113] In this scenario, the ratio domestic efforts / use of the flexibility mechanisms would be 168/12, i.e. 14/1.[114] This shows that domestic efforts would constitute a 'significant element'. Unfortunately, the targets and projections in this Plan were unattainable to the Government of Canada. The

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[112] In June 2007, however, the Norwegian government presented its new paper on climate change policy. containing proposals for concrete new measures to reduce greenhouse gas emissions. See further par.3.2.3.2.

[113] Government of Canada 2002, Climate Change Plan for Canada

[114] These numbers are based on the data available in 2002. See note 103.

gap between its Kyoto target and its 2010 emission projection extended from 240 MT to 270 Mt.

In 2005, the Government released its revised Implementation Plan to the Climate Change Plan: "Moving Forward on Climate Change: A Plan for Honouring our Kyoto Commitment". The Plan intended to close the gap of 270 MT greenhouse gas emissions, and contained a number of important elements among which the Climate Fund. Through the new Climate Fund, the government intended to purchase 75-115 Mt of reduction credits a year, up to 40 percent of the total reduction needed in 2008-2012. Priority would be given to domestic reductions from farmers, forestry companies, municipalities, and other sources. Reductions would also be purchased through the Kyoto mechanisms to help Canada comply with its Kyoto target. The Plan contains however very few specifics on this Fund, particularly in what types of projects and reductions will be funded, whether the overall target is possible, where emission reductions will come from or whether sufficient money has been allocated. Clearly some international credits will be purchased through the Kyoto Protocol CDM/JI provisions, but the ratio between domestic actions and use of the flexibility mechanisms cannot be elucidated from this Implementation Plan.[115]

In April 2007 Environment Minister John Baird announced a new climate plan for Canada, entitled "Turning the Corner: An Action Plan to Reduce Greenhouse Gases and Air Pollution". Under this plan, Canada would reduce greenhouse gas emissions 20 percent by 2020. However, that would be a 20 percent reduction from 2006 levels. In this scenario Canada will not reach its 2012 Kyoto commitments until at least 2023.[116] With regard to flexibility mechanisms, the Plan allows Canadian companies access to the Clean Development Mechanism up to 10% of each firms' total target. The Plan does not specify the amount of reductions which would be achieved through governmental participation in the flexibility mechanisms of the Kyoto Protocol.

[115] David Suzuki foundation 2005.

[116] Government of Canada 2007.

Canada is committed to reduce its greenhouse gas emissions to 6 per cent below 1990 levels. However, the country's emissions are now 30 percent above 1990 levels.[117] As Canada is far from compliance with its Kyoto reduction target, the Canadian government may be necessitated to purchase a considerable amount of credits on the international market. It is yet uncertain how the Compliance Committee of the UNFCCC will act in such a situation.

3.2.4.2 Norway's Climate Change Policy

Under the Kyoto Protocol, Norway has a commitment to maintain its greenhouse gas emissions at a level of maximum 1 per cent above its 1990 level, which means an emission level of 50.6 million tonnes. Although Norway reported in its fourth national communication that after the implementation of domestic mitigation measures Norway would still face a gap to its Kyoto target of about 10 million tonnes annually[118], the Norwegian Government presented its 2007 White Paper on Climate Change that it aims to improve on Norway's commitment under the Kyoto Protocol by 10 per cent.[119] This implies that Norway has to reduce its greenhouse gas emissions by 9 per cent compared with its 1990 level, an emissions level of about 45 million tonnes of CO2-equivalents. According to the projections of the Government presented in its National Budget 2008, Norway would have a greenhouse gas emissions level of 58 million tons in 2010.[120] This is about 8 million tons above its Kyoto target and 13 million tons above its White Paper target.

In fact, the amount of 8 million tons could have been much higher if Norway had not undertaken any domestic actions since 1990. Indeed, between 1990 and 2004 Norway has implemented various measures with a total reduction effect of about 11 million tons of

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[117] Canada's Fourth National Communication

[118] Norway's report on demonstrable progress under the Kyoto Protocol, p. 8 and 16

[119] Norwegian Ministry of Environment 2006-2007.

[120] Norwegian Ministry of Finance 2007-2008. This 2010 projection differs from the projection presented in Norway's fourth national communication, in which Norway presented its 2010 projection as if Norway had not undertaken any early actions at all, such as the introduction of the 1991 CO2-Tax.

CO2-equivalents. Among these measures were a CO2-tax, a requirement to collect landfill gas, tax and recycling schemes on HFC, and a climate change agreement with the aluminium industry.[121] The implementation of these measures caused the 2010 projection to be at 58 million tons instead of 69 million tons greenhouse gas emissions.

The gap of 8 million tons could be closed either by further national reduction measures or by the governmental purchase of emission allowances. As to the first option, the Norwegian Pollution Control Authority presented in 2007 a report on mitigation options to meet the goals described in the Government's White Paper. In total, the new technical mitigation options could by 2020 have an emission reduction potential of 22 percent compared to the emissions in 1990[122]. The reduction options are within CO_2 capture and storage, road traffic, emissions from buildings, oil and gas extraction, offshore electricity supply, industrial installations, emissions from agriculture, the waste sector, and finally mitigation options and technological development for ships.[123] These reduction options are under consideration as measures to meet a greenhouse gas emission reduction of 30 per cent below 1990 levels by 2020, which is also an aim described in the Government's White Paper.

These mitigation options might enable Norway to meet its White Paper's aims, however they do not contribute to the achievement of the Kyoto target, as the first Kyoto commitment period has already begun. Instead, this Kyoto target will be achieved by use of flexibility mechanisms. To meet the Kyoto target of 50,6 million tons, the Ministry of Finance describes in its 2008 National Budget that the Government needs to buy emission allowances covering 6 million tons of greenhouse gas emission annually. The remaining 2 million tons will be achieved mainly through the absorption of carbon by trees. Forests will thus act as 'carbon sinks'. New mitigation measures to reduce emissions in Norway will

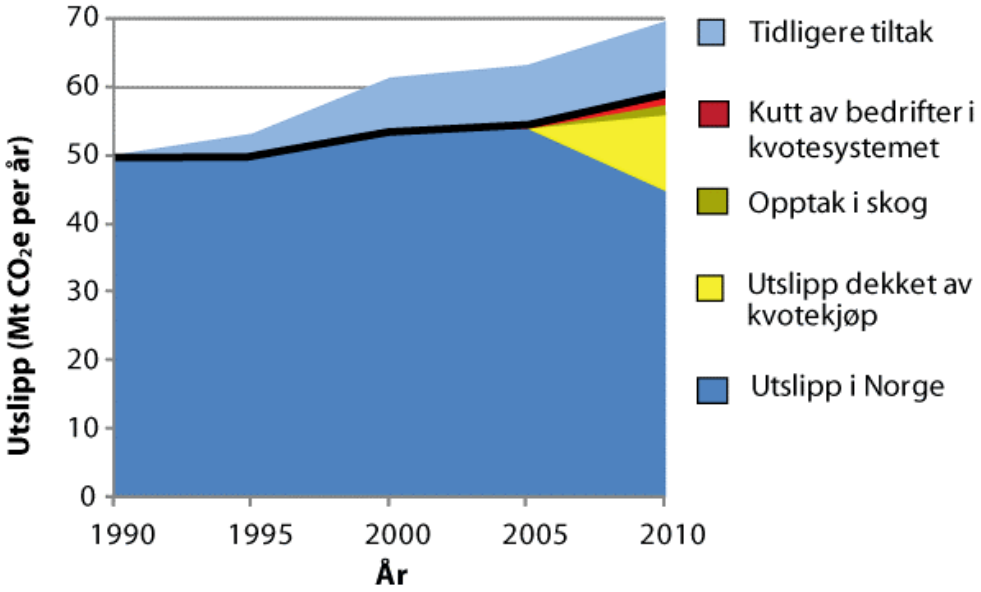
[121] See further, Norway's Fourth national communication, p.53.

[122] Norwegian Pollution Control Authority 2007.

[123] Ibid.

only have a very small contribution.[124] Moreover, to meet the aim of the 10 per cent over-fulfilment, additional emission allowances have to be bought equivalent to 5 million tons of greenhouse gas emissions. In total, for the period 2008-2012 the Government acquires emission allowances equivalent to 11 million tons of greenhouse gas emissions annually[125].

Thus, Norway intends to meet its Kyoto target and its White Paper target broadly through a combination of the effect of early implemented domestic measures and by paying for emission reductions in other countries, especially developing countries.[126] The following figure shows expected greenhouse gas emissions for Norway between 1990 and 2010 without the implementation of mitigation measures compared with the effect of implemented measures and the use of flexibility mechanisms. The light blue area represents the emission reductions achieved through early actions implemented since 1990. The yellow area shows the amount of emission allowances bought through the flexibility mechanisms. The black line shows Norway's emissions without any use of the flexibility mechanisms in the Kyoto Protocol.



[124] Kallbekken 2008.

[125] Norwegian Ministry of Finance 2007-2008, St. prp. nr 1 re kap. 1638 'Kjøp av klimakvoter'.

[126] Norwegian Parliament 2007, 'Klimaforliket i Stortinget', Innst. S. nr. 145 (2007-2008)

Source: Steffen Kallbekken, CICERO Center for international climate and environmental research, Klima 1-2008, 'Slik skal Norge oppfylle klimamålene'. Available in Norwegian at <http://www.cicero.uio.no/fulltext/index.aspx?id=5898>

The ratio domestic actions / use of flexibility mechanisms for the achievement of the White Paper 2010 greenhouse gas emissions target of 45 million tons annually is 11/11. For the achievement of the Norwegian Kyoto target, the ratio is 11/6. On 26 October 2007 Norway officially joined the EU ETS[127], which allows Norwegian operators to use credits from the project-based mechanisms up to equivalence of 3 MtCO2.[128] In order to meet the Kyoto target, Norway could now use allowances from the project mechanisms up to 9 Mt CO2. 6 Mt Co2 through governmental purchase and 3 MtCO2 through operators.[129] This raises the ratio domestic actions versus use of the flexibility mechanisms to 11/9, i.e. 1.2/1 Mt CO2.

Although this ratio indicates that the Kyoto target is achieved mainly through domestic actions, all domestic measures were already in effect before 2003. Instead of closing the gap to the Kyoto target by a combination of additional domestic measures and use of the flexibility measures, as most Kyoto Parties reported to intend, Norway intends to acquire a considerable amount of emission reduction units from other countries.[130] It is questionable whether this is in line with the supplementarity requirement.

In fact, the Kyoto Protocol only regulates climate action for the first commitment period from 2008-2012 and compares Parties efforts with their base year levels. The Kyoto Protocol does not, however, specify any quantification of the emissions level between the base year 1990 and the commitment period. In assessing actions of Annex I Parties,

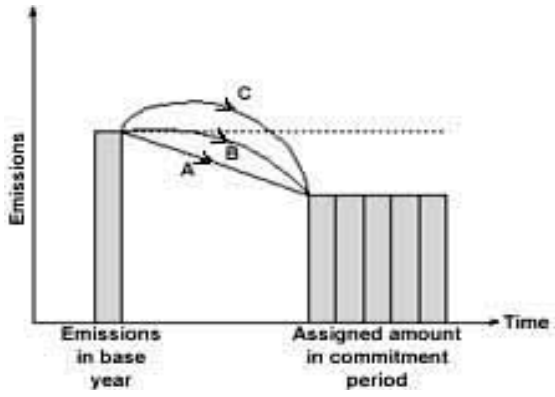
[127] Norway's Ministry of Foreign Affairs, St.prp. nr. 26 (2007-2008).

[128] See further par. 3.2.4.3.

[129] Government of Norway, Norwegian National Allocation Plan for the emissions trading system in 2008-2012.

[130] See also the website 'Carbon Neutral Norway' at which the Ministry of Finance describes its policies and measures to over-fulfil its Kyoto commitment by 10 per cent, to reduce emissions with 30 per cent by 2020 and to become carbon neutral in 2030. These targets will mainly be reached by the purchase of Certified Emission Reductions from CDM projects.

specific actions between 1990 and the commitment period are thus not taken into account. However, policies and measures that were implemented or adopted since 1990 may have an effect on the total emissions level during the first commitment, as in the case of Norway.



Source: <http://www.cseindia.org/programme/geg/briefing_kyoto2.htm>.

To memorize, domestic actions shall constitute a significant element in Parties' policies to meet their Kyoto reduction targets. In order to comply with this supplementarity requirement, it seems reasonable to argue that it is not of importance when those domestic measures came into effect, as long as they are still in effect at the time the government makes use of the flexibility mechanisms. Under the Kyoto commitment period from 2008 – 2012, those domestic measures still need to be effective, which means that they should result in an amount of greenhouse gas emission reductions outweighing the reduction in greenhouse gas emissions resulting from use of the flexibility mechanisms by Norway. If this can be demonstrated, Norway would presumably be in compliance with the supplementarity requirement.

On the other hand however, it would be unsustainable and against the ultimate objective of the Framework Convention if a Kyoto Party does not exploit its domestic reduction capabilities, and instead of implementing available additional reduction measures at home uses flexibility mechanisms to comply with its Kyoto target. A policy more in line with the principles of the Framework Convention, such as the principles of sustainable development and common but differentiated responsibilities, would be to meet the Kyoto target partly by additional domestic reduction measures and partly by using flexibility mechanisms.

3.2.4.3 The European Climate Change Policy

Under the Kyoto Protocol, the EU has a reduction commitment of 8 per cent relative to their 1990 level, which means a Kyoto target of approximately 3936 million tons of CO2 equivalents. To meet this reduction target, the European Climate Change Programme (ECCP) was established in June 2000 to help identify the most environmentally and cost-effective additional measures to meet the Kyoto target. The policies and measures under the ECCP complement those of the Member States. The programme investigated more than 40 measures in total using selection criteria such as cost effectiveness and time frames. A package of a number of measures in the energy, transport and industry sector was identified to be implemented with priority.[131]

An important component of the European climate strategy to reach its Kyoto target is the European Emissions Trading Scheme (ETS). The ETS was established by Directive 2003/87/EC. Under the ETS, operators receive emission allowances from their government which have to be surrendered at the end of each year, equal to their emissions in that year. Operators holding more allowances than verified emissions may sell unneeded allowances to other operators in the EU in need of more allowances, or keep them for future years. While international emissions trading is a mechanism under the Kyoto Protocol directed at Annex I parties and takes place between governments, the ETS is directed at operators of certain installations in the EU. It is an EU measure to reduce greenhouse gas emissions and trading takes place between private entities.

Besides trading emission allowances within the trading scheme, a linking between the ETS and the two flexible project mechanisms, clean development mechanism and joint implementation has been established[132]. This allows European operators covered by the ETS to carry out emission-reducing projects in other Annex I countries (JI) and non-Annex I countries (CDM) and to convert the credits earned into emission allowances under the ETS. The linking Directive thus allows operators to buy credits from joint implementation

[131] Commission of the European Communities 2001.

[132] Directive 2004/101/EC.

(JI) or clean development mechanism (CDM) projects and bring them into the EU ETS to fulfil their obligations.

The CDM and JI can be used by operators covered by the ETS as well as by those governments, which have set domestic targets not sufficient to meet the emissions limits of the European Burden Sharing Agreement in the Kyoto Protocol. The EU ETS is estimated to contribute by at least approximately 150 Mt CO 2 to the reduction of EU 15 greenhouse gas emissions, which is equivalent to 3.4 % of EU‑15 base-year emissions.[133] Linking Kyoto flexibility mechanisms to the emissions trading scheme has a further reduction potential of 187.5 Mt CO2.[134]

The EU Commissions has not set a limit to the usage of Kyoto units resulting from emissions trading by EU operators, because this is regarded as a domestic measure. With regard to the usage of credits resulting from CDM and JI projects by operators, however, governments are required to consider the supplementarity requirement and are required to restrict the use of them by operators. As part of the second National Allocation Plans[135] covering the Kyoto commitment period, Member States had to include a limit on the maximum use of project-based credits by operators.[136] For most EU member states, the limit for use of the CDM/JI by EU-ETS operators, approved by the EU Commission, is 10% of their EU-ETS cap. For the Netherlands, this means a limit of 8.6 Mt. Besides the 20 Mt CO2/year through governmental use of the flexibility mechanisms, EU-ETS operators

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[133] European Environment Agency 2007, p.53.

[134] Ibid.

[135] Under the EU ETS Directive, Member States prepare national allocation plans (NAP) for each trading period which have to be accepted by the European Commission. The allocation plans include the total quantity of allowances which will be available during a trading period along with the rules for allocating these allowances to operators, amongst others. For the first trading period from 2005-2007, the final NAPs for all of the EU countries are since June 2005 accepted by the European Commission and made public. The NAPs as well as some government programs contain information on the planned government purchase of CDM and JI credits.

[136] Directive 2004/101/EC (5)

can use CDM and JI to acquire emission allowances up to 8.6 MT a year. For Italy, with a limit at 15 per cent of their EU-ETS cap, this means a limit of 29.3 Mt CO2/year. This amount is apart from the 19 Mt Co2 equivalents acquired through governmental use of the flexibility mechanisms.[137] For the EU-15 in total, the limit is 14.5 per cent of the EU ETS cap[138]. In the EU-15, the allowed use of JI and CDM by operators is approximately 2.6 times higher than the intended use of Kyoto Mechanisms by EU Member States, which amounts to 107.5 Mt CO 2‑equivalents.[139]

Although the EU ETS is a domestic EU measure to reduce greenhouse gas emissions in the EU, use of the flexibility mechanisms Joint Implementation and the Clean Development Mechanism by operators does in fact increase a country's use of the flexibility mechanisms. Even though EU Kyoto Parties only report on their governmental purchases of emission allowances[140], those Parties are also responsible for purchases of emission allowances by operators subject to their jurisdiction. Adding the purchases of operators to the governmental purchases, this considerably changes the ratio domestic actions versus use of the flexibility mechanisms.

As an illustration, if operators purchase allowances up to the limit, the EU 15-countries would acquires around 387 MtCO2 through CDM and JI projects, this is inclusive 107.5 MtCO2 acquired through governmental purchases.[141] Italy could in total acquire 48 Mt CO2 and the Netherlands 28.6 Mt CO2. As purchases by operators can significantly increase use of flexibility mechanisms by an EU Kyoto Party, this raises questions as to a country's compliance with the supplementarity requirement. The domestic actions of such a Party still have to constitute a significant element of the total efforts to meet Kyoto

[137] European Environment Agency 2007, p.54.

[138] Commission of the European Communities 2007.

[139] European Environment Agency 2007.

[140] See the National Communications of members of the European Union..

[141] Klepper and Peterson 2006.

targets and these actions have to outweigh the combined effect of governmental purchases and purchases by operators.

The EU Commission contemplated the use of project-based mechanisms by EU governments and operators in its 2008 Climate Package, and expressed concern that "too generous a use of CDMs can dilute the effectiveness of the ETS" […] "and reducing the incentive for governments and companies to promote emission reductions at home". "Under the new ETS, companies will still have access to CDMs, but the use of credits generated by such mechanisms will be limited to the levels used in the current ETS period."[142] There is thus no intention by the EU Commission to alter the limit on the maximum use of project-based credits by operators in the future.

According to Article 25 of EC Directive 2003/87/ec, the EU ETS can be linked with compatible emission trading schemes in other Annex B countries that have ratified the Kyoto Protocol.[143] Norway wished to be linked to the EU ETS on 1 January 2008, however it wished for an exception from the restriction on the purchase of CDM and JI allowances. The CDM/JI cap for EU ETS operators varies from 8 per cent to 20 per cent, while the limit is set at 10 per cent for most Parties.[144] Norway did however not wish such a restriction.[145]

On 26 October 2007, the European Commission announced that it had come to an agreement with the countries in the European Economic Area on linking their respective Emissions Trading systems with the EU ETS. In line with EU legislation and practice[146], a cap is set on the number of credits from the Kyoto Protocol's project-based mechanisms that operators may use. The cap for Norway is 20% of the total quantity of allowances. Norwegian companies will thus be among the companies in Europe that have the most

[142] Commission of the European Communities 2008.

[143] EU national communication p. 47-50

[144] European Environment Agency 2007, p.54

[145] http://www.dn.no/forsiden/politikkSamfunn/article1122265.ece?WT.svl=article_title

[146] Directive 2004/101/EC (5).

opportunity to use JI/CDM allowances.[147] In order to meet the Kyoto target, Norway could use allowances from the project mechanisms up to 9 Mt CO2. 6 Mt Co2 through governmental purchase and 3 MtCO2 through operators.[148]

3.3 Conclusion

This chapter aimed to clarify the phrase that domestic actions shall constitute a 'significant element', through an assessment of the implementation of the supplementarity requirement and of the specific review and reporting requirements within the European Union and several Umbrella countries. The chapter demonstrated how the selected Parties have reported on their implemented and planned domestic policies and measures, their (intended) use of the flexibility mechanisms, and on the significance of domestic actions in comparison with use of the flexibility mechanisms.

The Secretariat summarizes in its 'Synthesis of reports demonstrating progress in accordance with article 3.2 of the Kyoto Protocol' that the national reports by Parties show that, taking into account both, the effect of implemented and additional measures, the overall effect stemming from domestic measures is projected to outweigh the effect of expected acquisition of Kyoto units in the overall effort to meet the Kyoto target.[149] In general, Parties domestic policies and measures are thus expected to form a significant part of the overall effort to achieve the Kyoto target[150]. Since the expert review teams have not questioned or criticised any of the domestic policies in the light of the supplementarity requirement and the Secretariat has only drawn general conclusions, it is difficult to provide a more specific interpretation of the supplementarity requirement in the Kyoto target. State practice seems not to have 'established an agreement of the Parties regarding the interpretation of the supplementarity requirement in the light of Article 31.3.b Vienna Convention on the Law of Treaties.

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[147] Office of the Prime Minister 2007.

[148] Government of Norway, Norwegian National Allocation Plan for the emissions trading system in 2008-2012.

[149] Synthesis of reports demonstrating progress', par. 97.

[150] 'Synthesis of reports demonstrating progress', par. 147

Due to the varying quality of National Communications, no objective general conclusions can be drawn on the implementation of the supplementarity requirement. Factual use of flexibility mechanisms by certain Parties could become much higher than reported in their communications. One reason for this is that certain Parties, for instance Canada, still have to implement effective national measures capable of bringing the Party considerably closer to its Kyoto target. As long as such measures are not in effect, there exists the risk that the Party needs to use flexibility mechanisms to a large extent to comply with the Kyoto reduction commitments. A different reason is related to the EU ETS and its Linking Directive. Operators in countries subject to the EU Burden Sharing Agreement, and since October 2007 also in Norway, Iceland and Liechtenstein, are allowed to make use of the CDM and JI up to a specific percentage of their total allowances. These purchases need to be added to the governmental purchases of a Party, as this will reflect more objectively the use of flexibility mechanisms by these countries.

The following table gives an overview of the implementation of the supplementarity requirement by showing the ratio between domestic efforts and use of the Kyoto mechanisms for the selected countries[151]. Total domestic effort is calculated as the difference between the '2010 without measures' projections and the '2010 with additional measures' projections. The ensuing number gives an indication of the total reduction of millions of CO2 equivalent reductions compared with a business-as-usual projection. Unfortunately, only a small number of parties have provided a 'without measures' scenario. The numbers between parentheses indicate that the number is inferred of the graphs provided in the Reports of in-depth reviews.

For Japan, the numbers are in accordance with the information provided in their National Communications and Reports on Demonstrable Progress. For Canada and Norway, national governmental documents have been the main source for the numbers. For all Parties falling

[151] In addition, Italy's ratio is included because Italy allocates €1,150 million of its budget for preparations of use of the flexibility mechanisms, which is more than any other EU member state.

under the EU Burden Sharing Agreement, not only their own National Communications, but also the 2007 Report on "Greenhouse gas emission trends and projections in Europe", by the European Environment Agency was an important source for the findings in the table.

The purpose of the table is to elucidate the ratio domestic efforts and use of the flexibility mechanisms by a number of Parties. Although the table shows in general that more than fifty per cent of the Kyoto reduction target is achieved through domestic actions, the exact numbers might differ from those in the table. This is due to the fact that Parties are not always consistent on the exact numbers presented in their reports and documents, and secondly, the business-as-usual projections are often uncertain and subject to adaptation. In general though, currently most Parties implement the supplementarity requirement by complying with their Kyoto reduction commitments mainly through domestic actions. 1 Mt of greenhouse gas emissions reduced through use of the flexibility mechanisms is compensated by a reduction of more than 1 Mt CO2 equivalents achieved through domestic action.

	Norway	*Netherl.*	*Switzerl.*	*EU15*	*Japan*	*Can.*	*Italy*
Kyoto target or EU B.S target	50.2	202	49	3936	1163	563	486
Base year level	49.8	215	53	4278	1237	599	520
2010 without measures	69	284	[54]	[4620]	[1400]	828	[609]
2010 with measures	58	215	51	4106	1311	828	592
2010 with additional measures	58	209	50	3940	1231	Na	524
Total domestic effort	11	75	4.2	680	170	Na	85
Remaining gap	8	7.5	1.2	4	67	Na	39
Use of flex. mech.	6	20	2	108	20	Na	19
Ratio domestic effort / use of Kyo.me.	11/6 1.8/ 1 Incl..L.D.: 11/9 1.2/1	74.8/20 3.74/1 Incl. L.D: 74.8/28.6 2.6/1	[4.2/1.6] 2.6/1	680/108 6.3/1 Incl. L.D.: 620/387.5 1.8/1	[170/20] 8.5/1	Na	[84.7/19] 4.5/1 Incl. L.D: 84.7/48.5 1.7/1

Na = not available

A '**with measures'** projection encompass currently implemented and adopted policies and measures.
A '**with additional measures'** projection also encompasses planned policies and measures.
A '**without measures**' projection excludes all policies and measures implemented, adopted or planned after the year chosen as the starting point for this projection.

4 The Assessment of the Supplementarity Requirement

4.1 Introduction

The previous chapters covered the interpretation of the supplementarity requirement in accordance with the Articles 31 and 32 of the Vienna Convention on the Law of Treaties. These chapters did however not put forward a workable interpretation of the supplementarity requirement. This chapter aims to provide an interpretation of the supplementarity requirement in accordance with the principle of effective interpretation, which requires an interpretation which is 'effective and useful'.[152]

With a view to a future climate regime, the most relevant and interesting assessment concerns the question of how the supplementarity requirement *should* be interpreted and how the requirement *should* be applied and implemented. No doubt, global greenhouse gas emissions are rising significantly[153] and although Annex I Parties to the Kyoto Protocol might succeed in meeting their Kyoto reduction commitments, this 5.2 per cent reduction target is clearly insufficient to tackle climate change effectively. Indeed, an effective future climate regime requires much more significant reduction commitments. Secondly, as developing countries' greenhouse gas emissions are rising considerably, the climate regime requires global participation. On this background, this final chapter provides an interpretation of the supplementarity requirement for the Articles 6, 12 and 17 which could contribute to the environmental effectiveness of the climate regime by both enabling Kyoto

[152] Whether or not such an interpretation is supported by the Vienna Convention on the law of treaties is subject to debate among scholars. While, for instance Cassesse argues that the Vienna Convention supports this principle for treaty interpretation (Cassesse 2005, p. 178), other scholars argue the opposite. This discussion however, goes beyond the scope of this paper. For an in-depth discussion, see Voigt 2007, p. 405-410.

[153] IPCC 2007: Summary for Policymakers.

Parties to meet more stringent reduction targets and on getting developing countries on board of a future climate regime.

In the first section, the cost-effectiveness argument behind the flexibility mechanisms is explained, as cost-effectiveness enables Parties to reduce greenhouse gas emissions to a larger extent. The cost-effectiveness argument is used to argue in favour of use of flexibility mechanisms and against a stringent interpretation of the supplementarity requirement. Not only the economic benefits of use of the flexibility mechanisms are described , but also the factors which can partly reduce cost-effectiveness among which the supplementarity requirement.

The second section presents the arguments in favour of the supplementarity requirement. First of all, it is argued that greenhouse gas emissions have to be reduced particularly within the industrialized world in order to tackle the climate change problem in the long term and to ensure the environmental effectiveness of the climate regime. Other arguments are the stimulation of technological development in industrialized countries; the role model of Annex I Parties; the sustainability of a future climate regime, including the problem of 'hot air'; and most importantly, equity considerations.

The final section assesses the importance of a balance between cost-effectiveness, environmental effectiveness, and equity considerations for a future climate change regime. As a sustainable climate regime requires the integration of those concepts, the supplementarity requirement should be interpreted on that background.

4.2 The Cost-effectiveness of the Flexibility Mechanisms

The reason behind the flexibility mechanisms in the Kyoto Protocol is connected to the cost-efficiency concept in economics; use of flexibility mechanisms in a competitive market would give a cost-effective outcome, as the agreed emission reduction target could be attained in the cheapest way possible.[154] This section clarifies the cost-effectiveness of

[154] Westskog 2001, p.5

the flexibility mechanisms in more depth while also presenting three factors that can reduce this cost-effectiveness.

The cost-effectiveness of Kyoto flexibility mechanisms relies on the significant difference in marginal abatement costs between countries and between sectors[155]. As the marginal costs of greenhouse gas emission reductions, which are the costs related to reducing emissions by an additional unit of greenhouse gases[156], vary greatly among the Kyoto Parties[157], several studies have pointed out the scope for costs savings by an efficient distribution of abatement costs across countries[158]. If Parties could make optimal use of these marginal cost differences, it is argued that the overall costs of combating climate change could be reduced by almost 80 per cent compared with domestic action only[159].

Cost-effectiveness requires that the marginal abatement costs are equalized across countries, or in other words, that the costs of reducing climate emissions with one more unit in one country is equal to the cost of reducing climate emissions with one more unit in another country.[160] In a competitive tradable market for emission allowances, a cost-effective situation is achieved since the price of a quota is the same for every country, and marginal costs can hence be equalized across countries. [161]

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[155] Pan 2001, par. 2.7

[156] See further Holtsmark and Hagem 1998, p.20

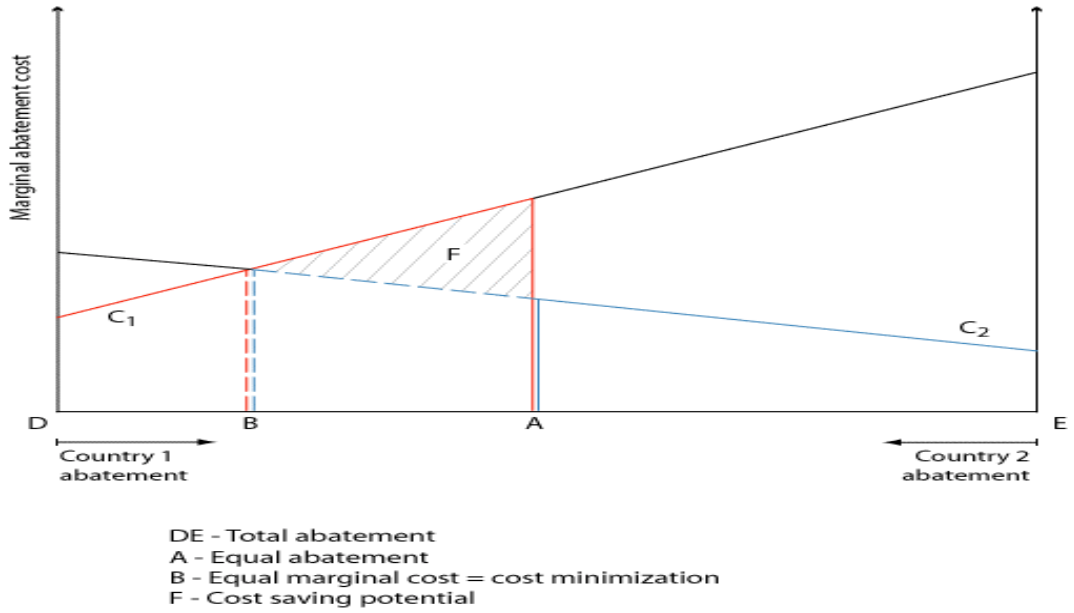
[157] Hourcade et al, 1996, Kram and Hill, 1996.

[158] See e.g. UNEP(1994), Kram and Hill (1996), Holtsmark and Hagem 1998, p.38, and Pan 2001 par.2.7

[159] E.g. Richels et al, 1996, Woerdman 2002.

[160] Westskog 2001, p.5

[161] Eykmans and Cornillie 2000.



Source:www.uio.no/studier/emner/annet/sum/SUM3000/v05/SUM-klimapol-okonomi-rettferd-180205.ppt

The equal marginal costs point (B) will be a cost-effective equilibrium where the targets set through the international agreement are reached in the cheapest way possible.

In general, the literature shows large potential gains from trade in emissions, both on regional and global basis[162]. These potential gains from trade are however calculated under the assumption of a well-functioning competitive market for quotas. In practice, the actual gains from trade might differ significantly from the potential gains.

4.2.1 Factors reducing cost-effectiveness

There are a number of factors that reduce the cost-saving potential of emissions trading.[163] Firstly, in a perfectly competitive market, cost-effectiveness is achieved through the minimization of total abatement costs across the participating countries. In reality, however, this might not be as straightforward as neo-classical economic theory suggest. Some large countries might take advantage of their market power through strategic

[162] See for instance, Westskog 2001, Pan 2001, Holtsmark and Hagem 1998, and Eykmans and Cornille 2000.

[163] Holtsmark and Hagem 1998, Westskog 2001, and Woerdman 2002

behaviour. If these large countries exercise market power, cost-effectiveness can be significantly reduced, and the general equilibrium of a perfectly competitive market will be distorted. Consequently, the equalisation of marginal abatement costs can no longer be guaranteed.

Secondly, in an initial phase of a trading regime there might not be a well functioning market for quotas, and trade will be based on bilateral agreements that may involve high transaction costs.[164] These transaction costs are a second factor that can reduce the cost-effectiveness potential of the flexibility mechanisms.

This section elaborates further on these factors and elucidates their meaning in the debate on the flexibility mechanisms. It is argued that, although these factors reduce the cost-effectiveness of the flexibility mechanisms, they do not reduce the cost-effectiveness to such an extent that they completely refute the cost-effectiveness argument behind the flexibility mechanisms. Moreover, it is explained that the market power problem and transactions costs might also be present in the case of a restriction on the use of flexibility mechanisms, which in itself questions the importance of these cost-reducing factors.

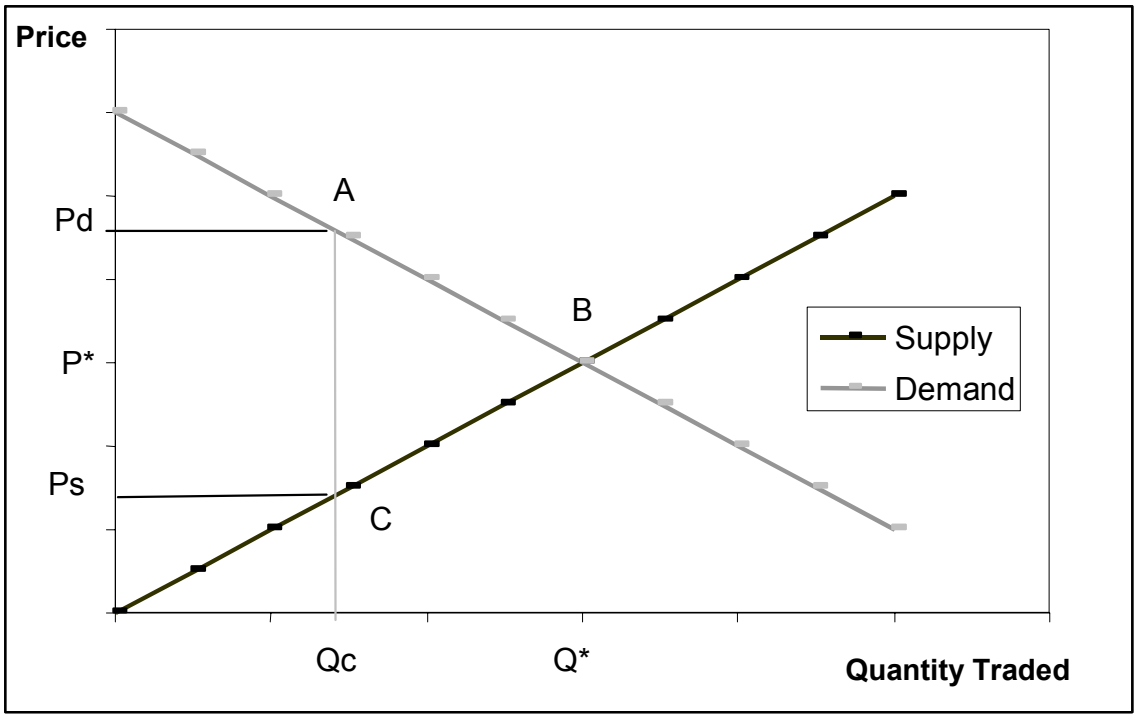
The supplementarity requirement, on the other hand, significantly reduces cost-effectiveness and will therefore be discussed first.

4.2.1.1 The effect of the supplementarity requirement

Most writers agree on the fact that the supplementarity requirement in the Kyoto Protocol adversely affects cost-effectiveness. Since the supplementarity reduces the possibility to acquire emission allowances and credits by way of emissions trading, joint implementation and the clean development mechanism, this reduces the cost-effectiveness of the mechanisms, because Kyoto parties are restricted in benefiting fully from the differences in

[164] Holtsmark and Hagem 1998, p.27, 40

marginal abatement costs between countries.[165] With a limit on the quantity traded, the price for emission allowances will be higher.



Source: Gusbin, Klaassen, and Kouvaritakis 1999

As the supplementarity requirement reduces cost-effectiveness, many economists argue for a flexible interpretation of the supplementarity requirement, which implies no ceiling on the possibility to rely on the use of the flexibility mechanisms to meet the Kyoto commitments. They underline in particular the increasing costs of complying with the Kyoto targets resulting from a stringent interpretation of the supplementarity requirement. For instance, Gusbin (1999) has presented the effect of a 50 per cent ceiling on the use of the flexibility mechanisms. In his study, the emission allowances an Annex I country can acquire from or transfer to another Annex I country are limited to half the volume traded without any restrictions on trading (i.e. in the full trade scenario across Annex I only). The first impact of the restriction on trade, that is in fact the objective of the constraint, is to increase the contribution of domestic action. Compared to the emission reduction efforts in

[165] Westskog, 2001

2010, acquisitions of allowances abroad would now be less important, and 'supplemental' to domestic action in every region. Yet the conclusion drawn by Gusbin was that reducing the traded volume to half would increase annual costs for the Annex I Parties by 50 per cent.[166]

Not only the supplementarity requirement does restrict the cost-effectiveness of the flexibility mechanisms. The market power problem and the issue of transaction costs might reduce cost-effectiveness as well, although these factors could be considered as 'unavoidable minor cost-effectiveness reducing factors'. The reason that this section includes a discussion of these minor cost-reducing factors is to show that the cost-effectiveness of the flexibility mechanisms is perhaps not so straightforward and should in fact be put in perspective.

4.2.1.2 The Market Power problem

To achieve a cost-effective distribution of abatement costs across countries, the market for tradable quotas must be competitive, which means that agents cannot, by their behaviour, influence the price of these quotas[167]. However, if there are certain large countries able to influence the price of quotas, cost-effectiveness in the quota market will be significantly reduced.[168] In a study by Westskog (1996) it is shown that under specific conditions the market power exercised by certain agents in a tradable quota market could amount to a 10 per cent efficiency loss compared to a competitive market[169].

In the case of emissions trading, Russia and Eastern Europe would be the most important seller of emission quotas under Annex I trading[170]. With trade limited to Annex I Parties, Russia could supply 70 per cent of the emission permits.[171] This might lead to monopoly

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[166] Gusbin et al 1999, using POLES, a partial equilibrium model of the world energy system

[167] Holtsmark and Hagem 1998, p.27

[168] Westskog 2001, p.10

[169] Westskog 1996

[170] Pan 2001, par.5.2.3

[171] Under the Kyoto Protocol, Countries should however maintain a 90 per cent 'commitment period reserve'

behaviour and a limitation of the volume of permits supplied in an attempt to drive up their price[172]. Several authors[173] have examined the effects of potential monopoly power by Russia and Eastern Europe and they identify that these countries could maximize their welfare and quota sales profit respectively. As monopolists, they could choose the price of emission quota supply to maximize profits, which will be the difference between the revenues from emission quota supply and the costs of domestic mitigation.[174]

Market power may also exist within the other flexibility mechanisms. A host country could exercise market power by restricting its supply of JI/CDM projects. The following reasoning could underlie a host country's supply restricting policy. Since developed countries take the lead in emission mitigation by the Kyoto Protocol, it is very likely that developing countries will have to commit emission limitation and reduction targets sooner or later. In order to avoid the possibility that only expensive opportunities are left after the Kyoto Protocol, developing countries may strategically limit the supply of cheap opportunities available to developed countries. For instance, some developing countries may reserve the first cheapest opportunity and only sell the second cheapest opportunity.[175]

Although the cost-effectiveness of the flexibility mechanisms could be reduced due to some agents exercising market power, it is not a fundamental disadvantage. The main part of the cost-saving potential of the flexibility mechanisms is probably nevertheless going to be exploited.[176] In the view of the cost saving potential of the Kyoto mechanisms, the market power problem does not affect this cost-effectiveness potential to a sufficiently serious degree, i.e. the cost-effectiveness argument of the flexibility mechanisms is not convincingly refuted by the market power problem.[177]

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that restricts the discretion to oversell.

[172] Gusbin et al 1999, p.26

[173] See for instance Bernstein et al 1999, or MacCraken et al 1999. Pan 2001, par.5.2.3

[174] Pan 2001, par.5.2.3

[175] Pan 2001, par.4.8

[176] Holtsmark and Hagem 1998, p.28

[177] Westskog 2001, p.11

Indeed, market power is only a problem if there are some large sellers/buyers of quotas. Manne and Richels (1999) examine the seller's monopoly under the global trading and they find that if low-cost sellers are concentrated among a few countries, they may have considerable potential for extracting monopoly rents[178]. However, an increasing number of small countries participating in quota trade would reduce the problem of market power. With a view to a future climate change regime, with the possibility of a global trading regime, there are therefore fewer possibilities to exercise market power than in a regime with trade only between a limited number of countries.[179]

Furthermore, it is argued that concerns about market power effects could also be raised under the supplementarity requirement. In a study by Ellerman and Wing (2000) it is demonstrated that implementing supplementarity, by imposing concrete ceilings on the purchase of emission quotas in a market for tradable emission quotas, gives rise to monopsonistic[180] effects similar to those that characterize a buyer's cartel. Restricting the purchase of emission quotas will result in a lower price for these quotas, following from demand restrictions[181]. In fact, all buyers will be better off over some range of restriction because up to a certain restriction the result will be lower total cost for importers than associated with free trade. In this situation, quota buyers could take advantage of their position and exercise market power.[182] It is thus argued that the implementation of the

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[178] Manne and Richels 1999

[179] Holtsmark and Hagem 1998, p.27

[180] In economics, a monopsony is a market form with only one or a few buyers facing many sellers. A monopsonist has market power, due to the fact that he/she can affect the market price of the purchased good by varying the quantity bought.

[181] See, for instance Bernstein et al 1999, Bollen et al 1999, Criqui et al 1999, Ellerman and Decaux 1998, Ellerman and Wing 2000, and Westskog 2001, p.11

[182] By restricting demand for permits on the international market, simulations for Kyoto greenhouse gas emission trading, reported by, among others, Ellerman and Wing (2000) and Criqui (1999), suggest that the EU and USA would benefit strongly from the imposition of moderate import ceilings. Eykmans and Cornillie (2001) argue therefore that behind the rhetoric of supplementarity a much stronger argument of self-interest might be hidden.

supplementarity requirement implies an exercise of monopsonistic power, since a concrete ceiling provides a coordinating mechanism for restricting demand that could be as effective as a buyer's cartel or the exercise of market power by a significant importer.[183]

Besides the fact that the market power problem might be present both under free trade and under the supplementarity requirement, several authors claim that the welfare loss due to the market power problem might be even bigger in the supplementarity case than in the monopoly case. Bernstein et al (1999) compared the monopoly power situation with a case of 30 per cent restriction on emission quota sales imposed by an international agreement. They concluded that the quota price will be higher under the 30 per cent restriction than under the monopoly case, and that this will harm OECD countries. The negative effect on Annex I Parties will spill over to non-Annex I Parties and cause their welfare to be lower under the 30 per cent restriction case than under the monopoly case.[184] At demand side, a restriction imposed on emission quota purchases also results in a terms of trade loss because less demands drive down the trading price and exports are reduced.[185] These authors conclude that even though market power reduces the cost-effectiveness of the flexibility mechanisms, a supplementarity cap of for instance 30 per cent could reduce cost-effectiveness even more.

Also in a study by Eykmans and Cornillie (2001) an interesting link was noticed between the market power case and the trading ceilings. They interpret trading ceilings as a particular expression of market power. Import ceilings can be interpreted as a way of enforcing monopsony power on behalf of the emission quota buyers. Conversely, export ceilings limit the supply of emission quotas which makes them more scarce and drives up the market price. Export ceilings can therefore be interpreted as monopoly power exercised by the emission quota sellers.[186]

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[183] Ellerman and Wing 2000, p.2, 9, 15

[184] Bernstein et al 1999.

[185] Bernstein 1999, Bollen 1999, Pan 2001, par.5.2.4

[186] Eykmans and Cornillie 2001, p.18, and Ellermand and Wing 2000

In sum, with no restrictions on the use of the flexibility mechanisms, a free trade equilibrium would be obtained in which the marginal costs of abatement would be equalized across sources, the global costs of compliance would be minimized and the gains from trade maximized. Although the market power problem may reduce the cost-effectiveness of flexibility mechanisms, several authors convincingly explain that this market power problem is also present in the case of a ceiling on flexibility. Some authors are even convinced that a cap on flexibility reduces cost-effectiveness and welfare more than the presence of market power. So, although the market power problem reduces the cost-effectiveness of the flexibility mechanisms, it do not reduce the cost-effectiveness to such an extent that it significantly refutes the cost-effectiveness argument of the flexibility mechanisms.

4.2.1.3 The problem of transaction costs

Not only the market power problem, but also transaction costs could reduce the cost-effectiveness of the flexibility mechanisms.[187] There are mainly three sources for transaction costs in the implementation of the flexibility mechanisms[188]. Firstly, the costs of providing information about trading partners. Secondly, the expenses incurred in connection with trade negotiations; and thirdly, the authorities' monitoring and enforcement costs.

These transaction costs appear whenever buyers and sellers encounter in the marketplace to make transactions[189]. They will erode the efficiency of the flexibility mechanisms, because they insert an additional cost to permit prices.[190] These higher prices of emission trading, for instance, raised by transaction costs will force the buyer to buy less and consequently the seller to sell less, and therefore reach a new equilibrium that is less efficient than the

[187] Woerdman 2002

[188] Stavins 1995

[189] Pan 2001, Field 1997, Montero 1997

[190] Stavins 1995

one without transaction costs.[191] Indeed, in contrast to the cost-effective solution with a tradable quota system with no transaction costs, marginal abatement costs are no longer equalized across agents. In the equilibrium with transaction costs, the agents set marginal abatement costs equal to the price of a quota plus the marginal transaction costs.[192]

Although transaction costs might significantly affect the cost-effectiveness of the flexibility mechanisms, it is argued by Westskog (2001) that the extent of the transaction costs problem depends on the type of flexibility mechanism used[193]. There is, for instance, a difference between allowance-trading programs and credit-trading programs when it comes to the extent of the transaction cost problem. Credit based approaches like JI and CDM require advance approval of every single trade, whereas transfers in a permit trading system will be automatically registered and only have to be checked at the end of the year[194]. Consequently, an allowance-trading mechanism normally has very low transaction costs, whereas transaction costs following from credit trades are much higher.[195]

Moreover, even though transaction costs may be significant in an initial phase of a trading regime, these costs will probably be of minor importance when the trading regime is well established.[196] The transaction costs problem will probably be of less importance as the climate change regime evolves through time and experience. Comparable with the market power problem, transaction costs do therefore not reduce the cost-effectiveness of the flexibility mechanisms to such an extent that it significantly weakens the cost-effectiveness argument. Clearly, by using flexibility mechanisms, Annex I parties can meet their Kyoto reduction targets as cost-effectively as possible.

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[191] Pan 2001, par.4.7

[192] Westskog 2001, p.12.

[193] See also Woerdman 2002, p. 216

[194] Tietenberg et al 1999, Vrolijk and Grubb 2000, Woerdman 2002, p.216.

[195] Westskog 2001, p.12

[196] Holtsmark and Hagem 1998, p.28, Woerdman 2002, p. 219.

Several analysts have provided sound theoretical arguments and useful policy simulations indicating that mitigation costs can be greatly reduced if there are no restrictions on use of the flexibility mechanisms[197]. While the International Panel on Climate Change emphasized in its Fourth Assessment Report the importance of effective climate change mitigation, it is questionable whether there should in fact be any restriction on the use of Kyoto mechanisms. A stringent interpretation of the supplementarity requirement clearly reduces the cost-effectiveness of the Kyoto Protocol, so the question is, why argue for having ceilings on flexibility? The following paragraphs present the arguments in favour of the supplementarity requirement and the reasons for a ceiling on the use of the flexibility mechanisms.

4.3 The Arguments in favour of the Supplementarity Requirement

The cost-effectiveness of the flexibility mechanisms enables Kyoto Parties to meet their Kyoto commitments at the lowest possible costs. Although Article 3.3 of the Framework Convention underlines the importance of cost-effectiveness, it is questionable whether a future climate change regime should give priority to cost-effectiveness at the expense of other interests. Indeed, unrestricted use of the flexibility mechanisms might enable Parties to meet their current Kyoto targets. However, in the long term, this might not lead to a significant enough reduction in global greenhouse gas emissions. Greenhouse gas emissions have to be drastically reduced on a global scale. To ensure the environmental effectiveness of the climate regime and the attainment of the ultimate goal of the Framework Convention and Kyoto Protocol, the unsustainable development trends in industrialized countries also need to be brought to a halt. This could be advanced through the supplementarity requirement.

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[197] See e.g. Weyant 1999. Rose and Stevens (2001) however argue that restrictions on the volume of permit trading do not significantly reduce cost-savings if permit trading is confined to original Kyoto signatories. Although overall mitigation costs will increase if a tradable permit system is constrained, the result by Rose and Stevens indicate that this effect is rather negligible in the case of trading among Annex B countries. In a worldwide trading scheme the result will however be different.

Besides ensuring the environmental effectiveness of the climate regime, various other arguments underscore the importance of the supplementarity requirement. The following paragraphs present these arguments. Although most arguments could perhaps be partly refuted, the objective to enhance the equity level of the climate regime, which could result in developing countries' participation in reducing greenhouse gas emissions, is the most ponderous argument and will be discussed last.

4.3.1 The stimulation of Technological innovation

It is widely understood that the Kyoto Protocol's first commitment period targets represent only a first step, and indeed that the emission cuts during this period will be relatively inconsequential compared to the overall challenge of climate change. For environmentalists it is therefore not enough to meet the Kyoto targets: it must be done in a manner which enhances our ability to meet more stringent targets in the future. This means, critically, creating incentives for the development and dissemination of clean and efficient technologies. A crucial question is how a future climate agreement should be designed in order to encourage technological innovation within new renewable energy production.

Several authors argue that use of the flexibility mechanisms could have a negative effect on technological innovation within energy efficiency and new renewable energy. Holtsmark and Hagem (1998), for instance, argue that emissions trading reduces marginal abatement costs, which again will reduce the demand for more energy efficient technologies. Emissions trading would thus reduce research and development incentives and technological innovation, and consequently adversely affect the long-term environmental impacts of the climate agreement.[198]

The supplementarity requirement, on the other hand, could stimulate technological innovation within the industrialized countries. It is reasonable to believe that a climate agreement that commits the industrialized countries to reduce their emissions of greenhouse gases domestically, especially those leading economies considered to be at the

[198] Holtsmark and Hagem 1998, p.9, 31.

'technology frontier', could have an important impact on technological development. If countries on the technology frontier are forced to limit their use of fossil fuels, it is likely that this will stimulate relevant research and development[199], and as the industrialized countries are forced to implement some difficult measures at home, this might generate solutions that could then spread globally.[200] As an illustration, replacing inefficient boilers in Ukraine with standard German boilers for instance, will give a considerable reduction in CO2 emissions, but it will not change the range of emission abatement technologies at our disposal. A similar level of emission reduction in Germany would require the invention of new boilers or other innovation in technology of techniques. This would in turn give all countries the potential to make deeper future emission cuts. [201]

The supplementarity requirement, by restricting use of the flexibility mechanisms and by increasing the costs of complying with the Kyoto Protocol, could thus foster technological innovation and the adoption of new, less emissions-intensive technology.[202] The effect on emissions reductions in the long term through innovated technologies might turn out to be more important than the short-term emission reductions that will follow from the Kyoto Protocol.[203] The intuitive importance of technology forcing has therefore remained an important factor for NGOs in favouring domestic action.

Nonetheless, some authors question whether a ceiling on flexibility effectively encourages technological development at home. They argue, for instance, that emission trading does significantly reduce the costs of the climate protocol and this implies, other things being equal, that there are more resources available for research on technological development.[204] Moreover, Rose and Stevens (2001) reason that, without a ceiling on flexibility, the country that purchases emission allowances always has an incentive to improve its

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[199] Holtsmark and Hagem 1998, p.31.

[200] Westskog 2001, p.14.

[201] Anderson and Bradley, in Yamin, p.205-207.

[202] Hourcade and Le Pesant, in Carraro 2000 p.121-163.

[203] Holtsmark and Hagem 1998, p.17.

[204] Holtsmark and Hagem 1998, p.32.

mitigation technology to reduce the number of permits it purchases, because that reduces the total costs for that country to comply with its Kyoto commitments.[205]

The positive effect of the supplementarity requirement on technological innovation is also questioned by Buonanno (2000). This author argues that although a ceiling on flexibility enhances technological development, the overall effect on marginal abatement costs and economic growth appears to be detrimental. The cost reduction achieved through free emissions trading would seem to stimulate growth more than the increase of research and development and of technological innovation through restricted trading. Buonanno shows that ceilings on flexibility do not stimulate research and development expenditure globally. Although ceilings are likely to increase research and development efforts in OECD countries, which are mainly net buyers of allowances, ceilings are likely to reduce expenditures in Russia, China and developing countries, net sellers of allowances, where the greatest stimulus to carry out research and development comes from the possibility to trade emission permits without restrictions. Because when ceilings are introduced, the demand for permits is lower and their research and development effort is consequently reduced.[206]

Frankly, Buonanno indirectly confirms the important effect of the supplementarity requirement, namely the stimulation of technological innovation within the industrialized countries. Even though a cap on flexibility might have a negative effect on abatement costs and economic growth, the effects of technological innovation in those leading economies, are of overriding importance to a future climate change regime. Technological innovation within new renewable energy production will, in the long term, enable the international community to reduce global greenhouse gas emissions to a much larger extent.

In sum, one of the arguments in favour of the supplementarity requirement is based on the view that the adoption of flexibility mechanisms reduces the incentives to carry out

[205] Rose and Stevens 2001, p.222.

[206] Buonanno 2000, p.10.

environmental research and development and technological innovation, thereby reducing the effectiveness of the climate regime and increasing the costs of abatement options in the long run. Most important, without technological innovation Kyoto Parties may not be able to reduce greenhouse gas emissions to a significant enough extent. In contrast, the incentives to technological innovation induced by the presence of ceilings on the use of flexibility mechanisms may enable the international community to tackle climate change more effectively. As an effect, this could reduce the impact of climate change control on the long run per capita income and welfare[207].

4.3.2 Role Model

Besides the argument that technological innovation within the industrialized world might 'automatically' spill over to developing countries, industrialized countries should also reduce greenhouse gas emissions at home in order to demonstrate willingness. A future climate regime requires worldwide participation and it is therefore important that developing countries are stimulated to adopt commitments themselves in the future.

In fact, developing countries and countries with economies in transition aspire to having economies that resemble those that OECD countries enjoy today. It is unrealistic and unreasonable to assume that these countries will take on climate targets if industrialized countries decline to do so on the grounds of costs. Prioritizing domestic action therefore is a strong signal to developing countries and countries with economies in transition that low-emissions pathways to prosperity are indeed possible and are being planned and developed. An unwillingness to promise emission cuts in rich countries, on the other hand, could be seen as confirming that such cuts were incompatible with running a rich country. Developing countries and EIT might then conclude that their economic aspirations preclude taking on climate commitments. Given that climate change by its nature requires emissions to be limited globally, this message could make the problem impossible to deal with effectively.[208]

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[207] Cullet 1998, p.7.

[208] Anderson and Bradley, in Yamin p. 205-207.

Ironically, the global nature of the climate change problem was also used to argue against a restriction on the use of the flexibility mechanisms; since an emission cut has the same effect wherever it is made, why not make the cuts where they are cheapest? NGOs argued that this view ignored the political value of rich-country leadership, which means that all emission cuts are not in fact equal.[209] Emission reductions within the industrialized countries have the political value of a role model and of setting an example for developing countries and countries with economies in transition. This argument is partly inspired through the principle of common but differentiated responsibilities and the fact that Annex I Countries should take the lead on climate change mitigation. This principle is further elaborated on in section 4.3.5.

4.3.3 Compliance with Kyoto commitments

A third argument in favour of the supplementarity requirement concerns compliance by industrialized countries with the current Kyoto commitments and especially with more stringent commitments in the future. Domestic action within industrialized countries is important because it gets more difficult for a Party to reduce greenhouse gas emissions in a second commitment period if it has implemented its Kyoto commitments of the first commitment period mainly in other countries rather than initiating a trajectory of reducing emissions at home. The supplementarity requirement could therefore enable industrialized countries to undertake more stringent measures in the future. This is also in line with the Convergence objective mentioned in the Bonn Agreement.[210] In order to narrow per capita emission differences between developed and developing countries, industrialized Parties have to reduce their greenhouse gas emissions.

Although use of the flexibility mechanisms may reduce short term abatement costs and therefore prove attractive to governments preoccupied with their political survival, but precisely because they allow continued investment in energy-inefficient technologies, they

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[209] Ibid.

[210] See Chapter 1, pp. 29-32.

tend to foster solutions that prove more expensive in the long term. This may exacerbate the likelihood that such countries will find it politically impossible to comply in the future[211].

A different aspect connected to the compliance issue concerns the risk that completely unrestricted use of flexibility mechanisms could mean a less effective climate agreement due to low degrees of compliance.[212] As an illustration, in the case of emissions trading between country A, the quota seller, and country B, the quota buyer, there could be potential economic gains for country A from non-compliance. Country A could for instance neglect its emission reduction commitments and sell emission quotas anyway[213], which could mean no emission reductions at all, neither in country A nor in country B. In the case of unrestricted emissions trading, there is an increased risk of non-compliance especially by countries with high national abatement costs, because such a country could decide to be a seller of emission quotas without having the intention to compensate that by national abatement[214].

Some large sellers of quotas, such as Russia, are in a difficult economic situation. Selling quotas could then be an important source for foreign earnings. In the case of countries with large economic problems it might be too optimistic to expect that sale of quotas will be met by increased national abatement efforts. Hence, emission trading might enhance cheating

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[211] Hourcade and Le Pesant, in Carraro 2000.

[212] Holtsmark and Hagem 1998, p. 17.

[213] However, with the aim of preventing Parties from overselling their quotas and thus making compliance to their Kyoto target impossible, a commitment period reserve rule was adopted. At all times during the first commitment period 2008–12, a country should keep a reserve equal to 90% of its Kyoto target in the national registry. Thus the net sum of all transfers must be less than 10%. If a country in its most recent verified national report has emissions lower than 90% of its Kyoto target, this country would be allowed to transfer quotas equal to the difference between reported emissions and the Kyoto target. The 90% rule could pose a challenge for some countries that risk large companies wanting to transfer a sizeable share of their quotas to other countries, which could compromise the commitment period reserve rule. See document: COM/ENV/EPOC/IEA/SLT(2001)13

[214] Holtsmark and Hagem 1998, p.29

and lead to less global abatement, unless there is a mechanism which prevents countries from cheating[215]. In fact, the supplementarity requirement, by simply restricting the allowed use of emission trading, could also reduce the problem of cheating and enhance the effectiveness of the Kyoto Protocol.[216]

4.3.4 The problem of 'hot air'

Connected to the previous argument behind the supplementarity requirement is the problem of 'hot air' trading. In contrast to the problem of non-compliance, where countries decide to cheat and neglect their Kyoto commitments, there are also countries which are not under a reduction commitment at all. Indeed, the Kyoto protocol has provided some countries with emission limitations above their business as usual emissions. The positive difference between the emission limitation and the business as usual emissions is often referred to as 'hot air'. At least Russia and some other EIT will have 'hot air'. Emission trading entails that these countries can sell these 'excessive' quotas. Increased emissions from the countries buying these quotas are however not compensated by reduced emissions from the countries that are selling their 'excessive' quotas. The consequence is that total global emissions are higher than they would have been in a situation where the hot air quotas were non-tradeable. This is the problem of 'hot air' trading.[217]

The problem of 'hot air' trading is mainly a political one. The practice of selling large quota surpluses to the industrialized countries, enabling them to avoid substantive action, could be regarded as violating the spirit of the Kyoto Protocol and the Framework Convention by violating the aim of developed-country leadership[218]. Batruch (1998) argues that unrestricted hot air trading between Annex I countries could set a legal precedent for developing countries. Once the negotiating process begins for developing countries, developing countries could rely upon the granting of hot air to countries with economies in

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[215] Holtsmark and Hagem 1998, p.30. For instance, a sanction mechanism.

[216] In practice however, the Kyoto protocol does already contain a compliance and enforcement mechanism, which deters Kyoto Parties from non-compliance and cheating.

[217] Holtsmark and Hagem 1998, p. 30, and Schwarze and Levy, in: Schwarze 2001.

[218] Schwarze 2001, p.9

transitions as a precedent[219]. Indeed, if Annex I countries are allowed to trade hot air unrestrictedly, it could be difficult to negotiate a future agreement with new countries that would have no possibility for hot air trading.[220]

The problems connected with the allocation of hot air quotas was one of the reasons that the EU, at the European Council of Ministers meeting in June 1997, concluded that flexibility mechanisms should be supplemental to domestic actions[221]. If use of the flexibility mechanisms is restricted, then hot air trading would also be restricted and the 'hot air' problem would be limited. It is however questionable whether restrictions on emission trading or directly on 'hot air' trading could reduce the problem of hot air.

Grubb et al (1999) and Schwarze (2001) argue that a supplementarity cap on the amount of quotas that Parties purchase would not necessarily solve the problem of hot air. It could simply mean that countries with real surplus assigned amounts would spread their hot air more widely among acquiring countries. Instead, in order to reduce the hot air problem, the only appropriate action would be a restriction on sales, which is however not covered by the supplementarity requirement.[222]

It is not only questionable whether the supplementarity requirement would solve the problem of hot air trading, but also whether that effect is desirable. The countries that most likely have hot air probably also have the lowest abatement costs. Restricting hot air trading would therefore increase total costs of the Kyoto Protocol significantly. It is, in

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[219] Batruch 1998

[220] Westskog 2001, p.13

[221] Ibid, and Schwarze and Levy, in: Schwarze 2001

[222] Grubb 1999, and Holtsmark and Maastad 2000.

In fact, restricting the sales of 'hot air' would also only have a temporary effect. With banking, assigned amounts that cannot be sold in the first commitment period will be saved for sale in future periods. A simple supply cap would thus only postpone the problem of 'hot air' into the future. Therefore, a supply cap would not be a viable solution to the problem of hot air. See Schwarze 2001, p. 12.

other words, a trade-off between some hot air trading and increased costs of the protocol.[223] On the one hand, restricting hot air trading significantly increases the costs of the Kyoto Protocol. On the other hand, however, hot air trading between two countries is not environmentally effective as it does not result in a greenhouse gas reduction in either of these countries.

With a view to the demands of a future climate regime, the possibility given to industrialized countries to buy emission allowances from other Kyoto parties and to increase their greenhouse gas emissions without a compensating reduction of emissions within the Parties selling these quotas, seriously weakens the strength of the climate regime. Indeed, hot air granted to countries could have serious implications on the achievement of the UNFCCC stabilization objective and might therefore slow down the process of combating climate change[224]. Hot air trading should therefore be restricted either directly through a hot air trading restriction or indirectly through the supplementarity requirement.

4.3.5 Equity

The most often mentioned argument in favour of the supplementarity requirement is based on the principle of equity. As mentioned in paragraph 2.2.3.1, it is often argued that unrestricted use of the flexibility mechanisms as an alternative to domestic action would contravene the equity principle and the idea of leadership by the industrialized countries, as use of the flexibility mechanisms would somehow enable the industrialized countries to transfer the burden of action onto other countries[225]. Proponents of the supplementarity requirement argue that it would yield a more equitable outcome if developed countries were restricted in exploiting developing countries' natural resources.[226] As equitable climate regime could work as a stimulus to get developing countries on board of a future climate regime, this argument should not be underestimated.

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[223] Holtsmark and Hagem 1998, p. 30

[224] Batruch 1998

[225] Anderson and Bradley, in Yamin 2005, p.205-207, and Buonanno 2000 p.14.

[226] Grubb et all 1999, p.218

However, not all authors agree on the idea that the supplementarity requirement enhances equity. Rose and Stevens (2001) reason that the moral finger pointing characterization of 'buying ones' way out of an obligation' should be tempered by the fact that the permit buyer does incur some costs, trading does help promote efficient resource allocation, and the process is likely to transfer wealth from rich countries to poor countries.[227] The transfer of technology and wealth is also mentioned by Buonanno et al (2000). This author argues that equity is not positively affected by ceilings on flexibility. Instead, Buonanno finds that use of the flexibility mechanisms increases equity and that the highest equity levels are achieved without ceilings, because use of flexibility mechanisms enables technology transfers and these tend to reduce income inequalities.[228]

Yet the ultimate objective of the Framework Convention is not to transfer wealth or to reduce income inequalities, but instead to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system[229]. The equity principle as mentioned in the Framework Convention and the Kyoto Protocol concerns the need for 'equitable and appropriate contributions' by each of these Kyoto Parties to the global effort regarding the Convention's objective.[230] The equity principle therefore requires Annex I parties to undertake actions which reduce greenhouse gas emissions and to contribute to stabilising greenhouse gas concentrations in the atmosphere. By technology transfers and the reduction of income inequalities, although important, Annex I Parties do not directly contribute to the ultimate aim of the Framework Convention[231].

In addition, the de facto contribution of the flexibility mechanisms, in particular of the clean development mechanism, to technology transfers has been questioned. Although the

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[227] Rose and Stevens 2001, p.222

[228] Buonanno 2000, p.14

[229] Article 2 UNFCCC.

[230] UNFCCC Article 3.1 and 4.2(a).

[231] Only by transferring highly innovated technology able of contributing to reducing global greenhouse gas emissions in the long term Annex I Parties would probably do so.

CDM is expected to lead to technology transfers from industrialized countries to developing countries, in practice, this is not so straightforward. The rate of technology transfer varies significantly across host countries. Factors are national import policies, technological development in given sectors, host country natural endowments and industrial outlook, together with national CDM policies. These all influence distribution of CDM projects across different sectors and the scope for technology transfer within a given sector.[232] Haites (2006) concludes that overall only one-third of all CDM projects involve technology transfer. This is 30 per cent according to TERI (2006)[233] and 25 per cent according to Haake (2006). Thus, CDM projects do only in certain occasions entail technology transfers.

Currently, it appears thus not to be convincing that technology transfers enhance the equity level of the climate regime. Instead, the supplementarity requirement works as a safeguard for the equitability of the climate change regime.

4.4 In sum

For the sustainability of the present and future climate change regime, it is important that that regime is environmentally effective, which requires significant global greenhouse gas emission reductions, that climate policy is based on cost-effectiveness, which allows the emission reductions to be achieved at the lowest possible costs, and that the regime is based on equity considerations, which would ensure developing countries' participation. The flexibility mechanisms in the Kyoto Protocol are included on the grounds of their cost-efficiency. The supplementarity requirement, on the other hand, defends the equitability of the international climate regime, and although the requirement reduces cost-effectiveness to

[232] Also, some countries generally have much larger projects than the average, as in the case of China, which may also explain a higher share of technology transfer claims. India is the country hosting the highest number of CDM projects, however this country stands out with a strikingly low technology transfer rate. See Haake 2006

[233] The Energy and Resources Institute 2006, 'The Clean Development mechanism and Technological change', 13 June 2006.

a certain extent, the equity level of the climate regime would be enhanced and thereby more global participation could be realised

4.5 Cost-effectiveness versus Equity?

The interpretation of the supplementarity requirement, either flexible or stringent, depends on which concept is given priority to. Cost-effectiveness interests require use of the flexibility mechanisms, a minimal restriction on their use and thus a very flexible interpretation of the supplementarity requirement. Equity interests, on the other hand, require a restriction on the use of the flexibility mechanisms and thus a stringent interpretation of the supplementarity requirement.

Although priority could have been given to either of these concepts, and clarity on the interpretation of the supplementarity requirement could have been provided, in fact, a successful environmentally effective climate regime is characterised by the representation of both principles. The principles are intertwined as they enhance each other, and the highest level of environmental effectiveness could be achieved through the integration of cost-effectiveness and equity. Such an integration of environmental, economic and social consideration is also mandated by the principle of sustainable development[234].

Already during the 1999 workshop of the European Forum on Integrated Environmental Assessment[235], the link between equity and efficiency of climate agreements was underscored by all Parties. Increased equity would help increase the number of participating countries, thus enhancing the efficiency of the agreement[236]. Increased efficiency would reduce each country's cost of controlling emissions, thus facilitating the adoption of transfer and co-operation policies that increase equity as well as the number of participating countries.[237] This link was also supported by Workgroup III of the IPCC's

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[234] Voigt 2006, p.505

[235] EFIEA Policy Workshop: Integrating Climate Policies in the European Environment. Costs and Opportunities. 4-6 March 1999, Milan, Italy. Host institute: Fondazione Eni Enrico Mattei.

[236] Carraro 2000, p.11

[237] Ibid.

Fourth Assessment Report. This Workgroup suggests that successful agreements are environmentally effective, cost-effective, incorporate distributional considerations and equity, and are institutionally feasible[238]. To achieve the ultimate goal of the climate regime, equity and efficiency issues thus need to be carefully integrated.

4.5.1 Interpretation of the Supplementarity Requirement in the light of the integrated equity-efficiency approach

As an environmentally effective climate regime is both cost-effective and equitable, the interpretation of the supplementarity requirement depends on the answer to the following question: to what extent is a restriction on cost- effectiveness sufficiently compensated by a positive effect on the equitability of the climate regime? This should be assessed for each flexibility mechanism separately because although supplementarity reduces cost-effectiveness in general, its effect on the equitability of the climate regime will differ for each flexibility mechanism. Equity considerations are not as such directly affected by Annex I emissions trading and joint implementation as by the clean development mechanisms between Annex I and Non-Annex I Parties. Consequently, it would be reasonable to interpret the supplementarity requirement in the Articles 6 and 17 of the Kyoto Protocol differently than the requirement in Article 12 of the Kyoto Protocol.

Indeed, it could be argued that a restriction on the use of emission trading and joint implementation within Annex I Parties significantly reduces cost-effectiveness without that this is being sufficiently compensated by an increase of the level of equity of the climate regime. Developing countries' interests are not sufficiently affected and therefore, a restriction on these two flexibility mechanisms seems to be ineffective. In this case, the supplementarity requirement should be interpreted flexibly, which means restricting use of these flexibility mechanisms to the least extent possible.

In contrast, use of the clean development mechanism could adversely affect equity considerations and the idea of Annex I country leadership. As explained in paragraphs

[238] IPCC Fourth Assessment Report Workgroup III, Par. 26

2.2.3.1 and 4.3.5, this could have a negative effect on the development of the future climate regime and the negotiations with developing countries on committing themselves to reduction targets. Even though a restriction on the clean development mechanism unavoidably reduces cost-effectiveness, this is sufficiently compensated by the maintenance of the equitability of the climate regime. Indeed, global participation attained through an equitable climate regime contributes to the environmental effectiveness of the regime. Therefore, use of the CDM should therefore be restricted through a stringent interpretation of the supplementarity requirement.

On the other hand, however, it is also argued that the CDM 'assists Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention"[239]. The main idea is that the CDM will stimulate foreign direct investment in greenhouse gas reducing projects in developing countries, thereby providing financing opportunities to the investment in and adoption of low-emission energy technologies in these countries. Eventually, the CDM could cause a less carbon intensive development in non-Annex I countries.[240] As the CDM should assist developing countries in achieving sustainable development, it is questionable whether a stringent interpretation of the supplementarity requirement is desirable. Indeed, even though equity concerns justify a stringent interpretation of the supplementarity requirement for the CDM, its potential to assist in achieving sustainable development might interrupt this reasoning.

Yet several shortcomings of the clean development mechanism have been recognized, and its de facto contribution to sustainable development has been questioned. The first shortcoming concerns the current design of the CDM and, in particular, the 'additionality' requirement which requires that emission reductions claimed from projects must be additional to what would have occurred in the absence of the CDM[241]. In order to meet this

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[239] Kyoto Protocol, Article 12

[240] Haake 2006

[241] This requirement is also applicable to Joint Implementation projects, however for the purpose of this paragraph only the CDM will be discussed thoroughly.

requirement, project developers establish a 'baseline' emissions scenario that reflects what would have occurred in the absence of the project. The amount of credits is then based primarily on the difference between the emissions baseline and the actual project emissions, as the CDM is supposed to reflect 'extra' emission reductions.[242] In practice, it has turned out to be very difficult for governments and investors to estimate the level of emissions that would have occurred in the absence of a project and then to calculate the marginal effect of their actions[243]. In this context, the CDM has been criticized because many projects might in practice not be significantly 'additional'. This has at least two consequences. Firstly, use of the CDM could in fact lead to a rise in global emissions. Secondly, the CDM is unlikely to significantly alter emission trajectories in developing countries[244]. Frankly, as long as CDM projects do not have the potential to generate technological and behavioural changes , the current design of the CDM disables meeting the CDM's purpose.

Related to the first shortcoming is the fact that the sustainable development component of the CDM is often surpassed by other interests[245]. As an illustration, a comprehensive assessment of the CDM in Latin America found that the sustainable development component of the CDM basically amounts to ensuring that 'the greenhouse gas mitigation project is congruent with the nation's existing environmental policies', rather that actually precipitating policy changes in a manner that promotes cleaner development[246]. The CDM is based on market principles, where project proponents seek out the cheapest emission reductions, not the most robust developmental benefits. This is evidenced by the fact that a

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[242] UNFCCC, 7th session, Marrakesh, Morroco, Oct 29- Nov 10 2001, Addendum to the report of the Conference of the Parties, 50-54, UN Doc FCCC/CP/2001/13/add.2. Available at http://unfccc.int/resource/docs/cop7/13a02.pdf

[243] Baumert 2006, p.8

[244] Ibid.

[245] De Cendra de Larragán 2006.

[246] Figueres 2004

majority of credits are expected to come from projects generating low-cost reductions of non-CO2 gases, which are perceived to have little or no development benefits.[247]

Finally, as explicated in paragraph 4.3.5, CDM projects only occasionally entail technology transfers. The shortcomings described above do weaken the CDM's potential to assist non-Annex I Parties in achieving sustainable development and in contributing to the ultimate objective of the Convention. Hence, on balance, the CDM's current potential to assist in achieving sustainable development does not interrupt our reasoning that equity concerns justify a stringent interpretation of the supplementarity requirement for the CDM. Although cost-effectiveness will be significantly reduced, once a global climate regime has been established and developing countries have been given the opportunity to exploit emission reduction opportunities within their own countries, the interpretation of the supplementarity requirement could be relaxed again.

4.6 Conclusions

This chapter assessed the supplementarity requirement for the flexibility mechanisms in the Articles 6, 12 and 17 of the Kyoto Protocol. At the outset, the rationality behind the flexibility mechanisms is explained. More specifically, it is argued that use of the flexibility mechanisms provide a cost-effective manner to meet the Kyoto Protocol's emissions reduction target. The supplementarity requirement restricts use of the flexibility mechanisms and thereby this requirement adversely affects the cost-effectiveness of the climate regime.

Nevertheless, although the requirement reduces cost-effectiveness, it might have a positive effect on various other aspects of the climate regime. Indeed, advantages of the supplementarity requirement and a restriction on the flexibility mechanisms are, for instance, that it would force industrialised countries to reduce greenhouse gas emissions by domestic actions and, hence, to develop new abatement technologies that could spread globally and really address the climate change problem in the long term. By increasing the

[247] Baumert 2006, p.8

amount and intensity of domestic actions, it might be easier for Kyoto Parties to meet more stringent reduction targets in the future.

In addition, industrialized countries undertaking reduction measures at home would have an important moral value vis-à-vis developing countries. As Annex I Parties need to respect the equity principle of the Framework Convention and the idea of Annex I Party leadership. This could in turn stimulate the willingness of developing countries to commit themselves to greenhouse gas reduction targets in the future. So, the development and design of the future climate regime would be positively affected.

The principle of sustainable development requires demands an integration of the various interests and the highest level of environmental effectiveness would be attained by a future climate regime which is both cost-effective and equitable. The supplementarity requirement should be interpreted in a way most beneficial to these concepts.

Total costs of emissions reductions do certainly increase as a consequence of trade restrictions, and restrictions on use of the flexibility mechanisms should be worth the efficiency loss. The interpretation of the supplementarity requirement should therefore depend on the answer to the question: 'to what extent is a restriction on cost-effectiveness sufficiently compensated by the positive effect on the equitability of the climate regime'?

From this point of view, I proposed a flexible interpretation for the requirement in the case of emissions trading (article 17) and joint implementation (article 6), and a stringent interpretation for the supplementarity requirement for the clean development mechanisms (article 12). As equity considerations are not directly affected by use of emissions trading and joint implementation within Annex I Parties, a stringent interpretation would go at the expense of the cost-effectiveness of the climate regime without that equitability would be significantly enhanced. Conversely, restricting use of the clean development mechanism could have an important moral value, and therefore a stringent interpretation of the supplementarity requirement in Article 12 Kyoto Protocol seems appropriate.

5 Concluding remarks

This research paper examined the supplementarity requirement for use of the flexibility mechanisms in the articles 6, 12 and 17 of the Kyoto Protocol. Supplementarity refers to whether Parties to the Kyoto Protocol, while using the flexibility mechanisms, also undertake sufficient domestic actions to comply with the Kyoto reduction targets. As the supplementarity requirement has not been quantified in the Kyoto Protocol, Kyoto Parties have disagreed on the amount of actions needed to be taken at home.

While some Parties rely on the idea of "cost-effectiveness so as to ensure global benefits at the lowest possible costs", to justify almost unrestricted use of the flexibility mechanisms, other Parties point at the political, social, and ethical reasons for preferring domestic action and instead argue that the principles of equity, common but differentiated responsibilities, and sustainable development necessitate a ceiling on flexibility.

This paper attempted to provide an interpretation of the supplementarity requirement based on the international law on treaty interpretation. Unfortunately, an interpretation of the supplementarity requirement in accordance with Article 31 and 32 of the Vienna Convention on the Law of Treaties has not put forward an effective and usable interpretation. Although a literal, systematic, and teleological interpretation emphasizes the importance of domestic actions, the divergence between Parties on the amount of actions to be undertaken at home resulted in a vague interpretation of the supplementarity requirement in the Bonn Agreement and the Marrakesh Accords requiring that domestic actions shall constitute a 'significant element' of the effort made by each Annex I Party meet its reduction commitments.

An analysis of Kyoto Parties' state practice in accordance with Article 31.3.b of the Vienna Convention on the Law of Treaties elucidated that currently most Parties implement the supplementarity requirement by complying with their Kyoto reduction commitments mainly through domestic actions. 1 Mt of greenhouse gas emissions reduced through use of the flexibility mechanisms is compensated by a reduction of more than 1 Mt CO2 equivalents achieved through domestic action.

It has to be recognized that this ratio might however change as soon as Parties become subject to more stringent reduction commitments. Indeed, the fact that Kyoto Parties achieve their Kyoto targets mainly through domestic actions might be due to a number of unintentional reasons instead of Parties' express willingness to undertake most actions at home. Most importantly, while most Parties have attempted to reduce their greenhouse gas emissions since the early 1990s by various domestic measures, the flexibility mechanisms have been developed and have become gradually more operational since the last decade. As a consequence, in comparison with domestic mitigation measures, the use of the flexibility mechanisms is not yet as extensive.

Besides an interpretation of the supplementarity requirement through the general rule of interpretation in accordance with Article 31 and 32 of the Vienna Convention, an assessment in accordance with the principle of effective interpretation needed to be part of this paper as well. The supplementarity requirement should be interpreted to ensure the attainment of the main objective of the climate regime as stated in Article 2 of the UN Framework Convention. To meet that objective, two essentials need to be recognized. Firstly, Parties have to become subject to much more stringent reduction commitments. Secondly, as greenhouse gas emissions are increasing significantly within the developing world, the next regime requires global participation. From this perspective, the arguments against and in favour of the supplementarity requirement were discussed.

The two apparently conflicting arguments appeared to be cost-effectiveness and equity. However, it was argued that for an environmentally effective future climate regime, both cost-effectiveness and equity concerns are equally important and the interpretation of the

supplementarity requirement should therefore depend on its effect on both these concepts. Effectiveness interests require use of the flexibility mechanisms, a minimal restriction on their use and thus a very flexible interpretation of the supplementarity requirement. Equity concerns, on the other hand, require a restriction on the use of the flexibility mechanisms and thus a stringent interpretation of the supplementarity requirement. As both concepts are equally important, the interpretation should depend on the answer to the question: to what extent is a restriction on cost- effectiveness sufficiently compensated by a positive effect on the equitability of the climate regime?

Assessing the supplementarity requirement form this perspective leads to a flexible interpretation of the requirement for international emissions trading and joint implementation between Annex I parties, because here the North-South relationship and equitability is not directly affected. A stringent interpretation would go at the expense of the cost-effectiveness of the climate regime without that this is sufficiently compensated by an increase in the equity level of the climate regime.

Conversely, a significant restriction on the use of the clean development mechanism could have an important moral value, and could thus result in the increasing participation of developing countries in a future climate regime, which is an absolute necessity since developing countries' greenhouse gas emissions are likely to overtake those of the industrialized countries within a few decades. Therefore, a stringent interpretation of the supplementarity requirement in Article 12 Kyoto Protocol seems appropriate.

Some scholars have attempted to refute the necessity of a ceiling on the clean development mechanisms by arguing that this mechanism contributes to sustainable development through the transfer of technologies from industrialized to developing countries. However, although unrestricted use of the this mechanism certainly allows a higher number of technology transfers, if that technology is not of such a high quality suitable to meet more stringent future reduction commitments, these transfers are rather ineffective. In contrast, the supplementarity requirement could stimulate technology innovation within industrialized countries which could then be spread globally.

In order to stabilise greenhouse gas concentrations in the atmosphere, new technology should be innovated and spread to developing countries. With these newer technologies, developing countries could develop their own industries, emit less greenhouse gases, contribute to tackling climate change, and they would be less vulnerable to the unavoidable consequences of climate change. For developing countries, this could lead to a higher standard of life which would not have become attainable that straightforwardly with transfers of relatively inefficient technologies.

In sum, to ensure the environmental effectiveness, cost effectiveness and equitability of the international climate regime and to ensure the attainability of the demands of the post-Kyoto climate regime, Annex I Parties to the Kyoto Protocol should be restricted in their use of the clean development mechanism, or in other words, they should reduce greenhouse gas emissions to the greatest extent at home. The implications of this conclusion vary from Party to Party and depends in particular on their national monetary state of affairs. Domestic actions should be preferred, however they should not place an unreasonable heavy financial burden on a Party. As to international emissions trading and joint implementation, there appears currently not to be a compelling need to restrict the use of these mechanisms by Annex I Parties.

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